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THE DIETARY OF HEART DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Nothing is more important in the management of cardiac affections than the regulation of the diet, which should include the determination of the amount as well as the quality of the food ingested. At the very outset we are confronted by certain perplexing problems that arise from circulatory disturbances in the digestive organs and by want of definite knowledge concerning alterations in secretion and absorption brought about through venous stasis. It is still more complicated because of alteration in the metabolic processes incident to changes in the blood-supply of the various organs and tissues. Indeed, the problems confronting us are so complex and have been so inadequately worked out as yet by physiologic chemists that, even were there no time limitations to this paper, I could not hope to do more than consider this subject very superficially.

In the first place, what are the effects of passive congestion on the digestive viscera? From analogy with the effect of stasis on secreting organs, as the kidneys, it is likely that the digestive juices are changed in both amount and quality. Even if the chemistry of these secretions were not altered, the catarrhal swelling of the mucous membrane induced by passive hyperemia would hinder the free flow of the bile and pancreatic juice into the duodenum, which, together with the collection of thick, tenacious mucus in the stomach, would interfere with the proper digestion of the food. Moreover, the congestion, and in advanced cases, the edema of the walls of the hollow viscera, impedes or abolishes their proper peristaltic movements. This renders decomposition of the ingesta unavoidable under the influence of heat, moisture and micro-organisms introduced with the food. The various acids, fatty and otherwise, thus engendered still further irritate the gastroduodenal mucosa, while the gases of decomposition still further distend these viscera. Thus a vicious circle becomes established that augments the evil primarily attributable to disturbed circulation. This is by no means the only aspect of the case; toxins are developed which must either be destroyed in the liver or pass through into the general blood-stream and exert their noxious effect upon the heart and nervous system. We are apt to dwell chiefly on the mechanical disturbances arising in the stomach and intestines, yet the pancreas is an organ that must suffer greatly in function. What modification of its secretion takes place we do not know; yet clinical observation seems to justify the inference that the amylopsin and fat-splitting ferment are more unfavorably influenced than is the proteolytic ferment. Nevertheless, it would be unreasonable to assume that this escapes altogether. Pancreatic digestion is undoubtedly impaired, and consequently the portal vein carries to the liver a mass of toxins together with the products of incomplete or faulty digestion.

This brings us to the most difficult, because the most obscure part of this complicated subject—the effect of passive hyperemia on the liver. This organ differs greatly from other glands, since its functional activity does not depend wholly on its arterial blood-supply, but is determined in large measure by the character of the blood in the portal vein and the activity of its flow. To give an illustration: The constitution of the bile and the rapidity of its secretion depend upon its absorption from the intestine and its return to the liver. If, now, in consequence of stasis in the gastroduodenal and other veins that empty into the portal vein, the bile discharged into the duodenum be returned slowly and inadequately to the liver, the bile thereafter secreted will be watery and deficient in mineral matters. And although the secretion of this fluid is but a minor part of the hepatic function, deterioration in quality and diminution in its quantity exert a baneful effect upon the intestinal contents. Again, if in consequence of defective gastrointestinal digestion the portal stream be loaded with toxins and the products of such faulty digestion, it is reasonable to assume a resulting derangement in the elaboration of urea and the manufacture of sugar, etc. Very probably also the ability of the liver to cope with toxins will be impaired and numbers of them will pass through into the general system. The anemia so commonly shown by cardiac patients seems to me not unreasonably explicable on the hypothesis that the liver is unable to utilize nucleo-albumins in the manufacture of iron, as well as that the hemoglobin is destroyed by some ferment generated in the intestines. Patients with heart disease are frequently found to suffer with symptoms of Haig's uric-acidemia, and Husche has demonstrated an accumulation of uric acid in the system during loss of compensation, and on the other hand, an increased elimination of it after restoration of compensation. This accumulation of uric acid must depend upon lessened or altered cell activity, as would be naturally expected to result from impaired circulation. Oxidation is defective, partly through reduction of hemoglobin, partly through sluggish capillary circulation, and hence, another factor in the derangement of the metabolic processes. On every side, therefore, we encounter problems of nutrition which we are not able to solve, yet which we must meet in the dietetic management of our cardiac patients. Evidently all we can do is to work along lines conforming with well-established principles.

It is presupposed that the foregoing considerations

do not apply with equal force to all cases of heart disease, inasmuch as the same lesion does not always manifest equal severity of symptoms, any more than do the different lesions. Therefore it is not necessary to enforce rules of diet with equal rigor in all cases. Broadly speaking, therefore, it will suffice to divide all cases into two groups; the one in which compensation is preserved, the other in which it is lost, more or less completely. Although carefulness of diet is advisable, even in the former, to preserve the heart from still further danger, still, considerable latitude may be permitted; but so soon as a loss in the equilibrium of the circulation becomes apparent, dietary restrictions should be enforced. The remainder of this paper is intended to apply particularly to patients whose cardiac weakness necessitates strict medical supervision.

When appetite flags and the patient can not eat heartily at the regular meal hours, it is usual for the physician or friends to think his meals must be reinforced by milk, eggnog and the like, midway between. In some instances nourishment is administered every two or three hours. Such is undoubtedly a mistake. The congested and perhaps edematous walls of the stomach can not by energetic peristalsis empty the chyme into the duodnum as rapidly as normal, and the conditions for decomposition are so favorable that, if additional food be taken before the stomach is ready for it, serious disturbances are sure to result. A feeling of faintness or craving at the epigastrium, often described as an "all-gone feeling," may be mistaken for an indication that food is needed, and as these patients are often tormented with thirst, liquids of all kinds are poured down into the already distended and irritated viscus at irregular intervals. Abdominal distension, eructations, flatulence and increased dyspnea add to the patient's distress. The first rule, therefore, should be to make five and a half or six hours elapse between the taking of solid food; and this should include milk, since by curdling in the stomach it is converted into solid food. So simple a restriction as this will often work wonders in regulating the digestion and removing the thirst and epigastric gnawing. If nourishment between meals is needed, it can be in form of somatose, nutrose and the like, that are not open to the objections urged against solid articles. Nutrient enemata can also be administered during this interval. In my experience, it is beneficial for the invalid to drink a cupful of hot water about an hour before the next meal, as it seems to aid in the expulsion of the chyme. Skillful massage of the stomach from two to four hours after meals is likewise highly serviceable to the same end, besides having been shown by Boardman Reed to augment the amount of hydrochloric acid.

The next step is the restriction of the amount of fluids ingested, particularly with meals. In severe cases patients should not be allowed to drink more than six ounces of fluid, while even in mild ones ten ounces ought to be the maximum limit. This does not mean water in addition to whatever other beverage has been prescribed, but all fluids combined. The purpose of this is to prevent undue distention of the stomach. When edema is imminent or actually present, the total amount of liquid ingested in the twenty-four hours must be reduced to the smallest quantity compatible with the needs of the system. It will generally be found that such a restriction will aid in the removal of dropsy. Milk should be regarded as liquid, for although its casein is coagulated, it must be remembered that 87 per cent. of the milk is water. Patients should likewise be restricted in the amount of solid food, a good and usually sufficient rule being that they leave the table feeling that they can eat more. A little, well digested, is worth far more than a good deal, poorly digested. This not only lessens the likelihood of distending the atonic organs, which it has been shown, furthers decomposition, but it tends to prevent the still greater cardiac embarrassment occasioned by post-prandial pressure. Such restriction must not be carried to the degree of starving the patient; and yet, if the quality of the nourishment be judiciously selected, it will often surprise one to find how small a bulk will suffice, nay, how it will minister to the patient's comfort.

In considering the various beverages and viands that should constitute the menu for this class of invalids, I think it best to deal with the subject in a general way rather than to attempt to set out the composition of individual meals. Tea and coffee should be weak, the amount of sugar and cream they contain being determined by the degree of digestive disturbance. Cocoa or broma is preferable to chocolate because less rich, and when made with milk is nutritious. If wines or liquor are thought advisable, they should be freely diluted with water. Buttermilk, or malted milk often makes a valuable addition to a meal, and generally agrees well. Effervescing drinks are objectionable on account of the distention they occasion; for this and other reasons I regard malt beverages as injurious. Nevertheless, they may sometimes be allowed when particularly ordered and their bitter taste stimulates a flagging appetite. Iced drinks should not be permitted, neither should fluids be very hot, as a medium temperature is undoubtedly better for a weak stomach. The question of soups and broths must be governed by the state of the kidneys and the habits of the patient. When nephritis exists, stock soups and meat extracts are to be rigorously interdicted. It should never be forgotten that beef-tea and the like are stimulants and possess no real food-value. Cream soups, or purées, as they are called, are not open to the same objection, and are highly nutritious. All these are fluids, however, and when taken in connection with solid articles of diet should be limited in amount, lest they blunt the appetite for what is to follow.

There are two considerations why the carbohydrates must be allowed but sparingly. One is their tendency to undergo fermentation and give rise to flatulent distention of the bowels, and the other, their ready oxidizability, by virtue of which latter quality they appropriate the oxygen required for the utilization of the nitrogenous elements of the dietary. Proteids are indispensable to the maintenance of the heart muscle, and therefore must always constitute a relatively large proportion of the food of cardiac patients. Yet circulatory derangement reduces metabolic activity of the cells; the physiologic leucocytosis becomes excessive, and uric acid and other members of the xanthin group resulting from the splitting up of the nuclein are apt to occasion annoying symptoms which we term "lithemia." Inasmuch as starches and sugars can not be withheld entirely they must be given in as unobjectionable a form as possible. Bread is best taken as toast or zwieback, light crackers, the so-called "shredded biscuits," etc. Entire wheat flour is far preferable to patent flour, since the latter contains little but starch; and if toast and the like grow

monotonous, baking powder muffins or rolls made very light and thoroughly baked may be substituted. Potatoes, both white and sweet, rice, cereals, and the multifarious combinations of flour, butter and sugar whether with or without eggs and milk, known as cake, griddlecakes, etc., are inadmissible. Sweetmeats, including candy and preserved and canned fruits, are likewise to be put under the ban. When fruits are desired or indicated, they are best in their natural state, but even then, must be fully ripe and fresh. Apples are particularly good, because of their relatively large percentage of nucleo-albumin; baked they are often better tolerated than uncooked.

Most of the green vegetables are valuable additions to the dietary, either because rich in proteids and other nutritive principles or on account of their serving as relishes and containing various salts essential to the organism. Peas, lentils, string beans and spinach are said to be relatively rich in iron-forming principles. Tomatoes, cabbage, cauliflower, turnips and kindred varieties are apt to disagree, but if well borne may be permitted. Asparagus, when not contraindicated by renal disease; celery, mushrooms, lettuce, greens of various kinds and young carrots are allowable, while onions, cucumbers, tender radishes and olives may be left to individual desire or idiosyncrasy. Beets are rich in sugar, but otherwise are not generally objectionable. The chief desideratum as regards all such vegetables is their freedom from liability to occasion flatulent distention, as do articles rich in starch and sugar.

Of foods rich in nitrogen, beef and pork head the list, but perhaps are not so easily digested as veal, lamb and mutton, which are excellent when not too fat. All meats should be roasted, broiled or stewed, not fried; but however prepared, they should be as free from gravy as possible and ought to be sufficiently well done to have destroyed the germs of decomposition, through whose action during the time of hanging the meat becomes tender. Fowl and game birds form a capital adjunct to the heavier meats, as also do fish and most kinds of shellfish, particularly oysters, properly cooked. Some of the salted meats and fish, when not too rich, provide appetizing and nutritious dishes. Canned salmon, sausages and the like are too rich in fat, and are apt to cause eructations, whereas fresh tripe is said to be easy of digestion. Cheese is to be forbidden excepting cottage cheese and some light cream cheese, as neuchatel. Eggs are admissible, and when properly cooked are very digestible.

In conclusion, a few words should be said concerning the dietary of two classes of cases: one, in which the cardiac affection is complicated with nephritis; the other, in which it is secondary to arteriosclerosis, with or without angina pectoris. In the former, highly nitrogenous articles are clearly inadmissible; yet carbohydrates promote digestive disturbances. Therefore, a compromise must be made, or milk must constitute the major part of the dietary. When arteriosclerosis is the main difficulty, we are confronted by another problem. We must nourish the overburdened heart, yet must avoid administering foods rich in lime salts, otherwise the sclerosis will be increased. Eggs, cereals and articles rich in phosphates are to be denied, or only permitted sparingly. Moreover, greater than ordinary care to avoid indigestion is imperative, since the products of defective digestion and faulty metabolism will set up vasomotor spasm. The successful management of cardiac disease often consists in the removal of whatever may serve as a hindrance to the performance of the organ. So simple a matter, therefore, as heightened blood-pressure may make powerfully against the restoration of an unsound heart.

Finally, it may be one thing to lay down a theoretic dietary for patients with heart disease, but it is quite another thing to carry it out in practice. Not only is our knowledge deficient of the physiologic chemistry of pathologic conditions; but we are hampered, even checkmated, by the notions, whims and prejudices of both patients and their friends.

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DISCUSSION.

Dr. BABCOCK—For the purpose of calling forth discussion I should like to direct attention to one or two points. The first is, What would be the value and desirability of nuts in the dietary of heart patients? Through an oversight, not discovered until after the completion of my paper, I omitted to include nuts. These are generally considered difficult of digestion; but I am convinced that this depends much upon individual idiosyncrasy. Nuts are rich in proteids that might well replace animal foods when these latter disagree, and are poor in carbohydrates except fats. Consequently, those kinds that contain the smallest percentage of fat ought to prove suitable for persons with heart disease, if not eaten in excess. The second point is the cause and treatment of the anemia so common in this class of patients. Is the hypothesis tenable that the liver is unable to utilize the nucleo-albumin of the food? Are the usual therapeutic preparations of iron, whether organic or inorganic, likely to prove of benefit? I am free to confess that I have become very skeptical as to the ability of the organism to assimilate iron except as obtained through the food; indeed, I rarely, if ever, prescribe it to my heart patients on this account.

Although as stated I do not administer iron to my cardiac patients with any expectation of its being assimilated as such, yet I feel bound to admit this contradiction, that I sometimes order it for its effect upon the gastro-intestinal tract in the way of stimulating appetite and digestion and thereby improving nutrition and indirectly overcoming the anemia.

As regards Dr. Whittiker's cases treated with iron, it might well be urged that the improvement was due to the rest and improved nutrition. It is conceivable that under such circumstances the heart-muscle might regain sufficient force to carry on the circulation in a more satisfactory manner; when the dropsy might at length disappear and the patient even lose all appearance of anemia, so that to my mind it does not furnish conclusive evidence of the improvement in these cases having been wholly due to the iron. The point advanced by the chairman, of the anemia being due largely to defective oxygenation of the blood is a good one, is worthy of careful consideration, and may furnish a valuable hint in the treatment of the anemia.

SUGGESTIONS ON THE DIETETIC TREATMENT OF GOUT.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The great Fothergill and Garrod taught us that uric acid was the causative factor in gout; that it was formed by the metabolism of nitrogenous waste; that it represents a lower degree of oxidation than urea; that uric acid and its salts, being insoluble, are much less easily eliminated, and hence they accumulate in the system; that it is in the liver the splitting up of peptones into glycogen and waste, azotized substance takes place, and its insufficiency causes the diminished oxidation that produces uric acid instead of urea. Haig, in his masterly treatise on uric acid, accepts this theory. This tracing of gout to an excess

of nitrogenous ingesta results in the exclusion of this important group of alimentary principles from this class of patients.

This origin of uric acid, as the exclusive one, can not be maintained today, for we know that much, if not all, of this product comes from the oxidation of the nuclein of the blood corpuscles, and that uric acid is not the sole etiologic factor, but that the uric acid group of leukomains is of great importance. The defects of metabolism which produce the phenomena of gout are neurotic in origin and gout is a neurosis. Not only do we find excessive formation of the uric acid group, but a deficient alkalinity of the blood, and this means diminished solvent power and the precipitation of the compounds in the tissues. With the annihilation of the old theory of the origin of uric acid and the etiology of gout, a review of the principles of diet in the disease has become necessary.

It is true of gout, as of every other disease, that the diet must be made to suit the patient. The old adage, "one man's meat is another's poison," is emphatically true here, so that while the diet of Haig may suit some cases, yet the very opposite, or a diet exclusively of animal food, after the "Salisbury" method, for example, is the best for other cases.

The object of this paper is to insist upon a much more liberal allowance of the albuminoids than the dietaries of Haig, Garrod or Fothergill and their followers permit. The functional activity of the body is largely dependent upon the albuminates, which are necessary to the formation and repair of the tissues and fluids of the body; they regulate the absorption and utilization of oxygen, and contribute to the production of muscular and nervous force and heat, and hence must be of great importance to these patients. Lower the nervous tone and you but add to the danger. The source from which the body can most easily obtain the albuminoid matter is animal food. The amount of this food that should be permitted will usually be less than that used by the normal individual, and yet the extent to which such a reduction can be carried with impunity will depend upon the digestive peculiarities of the individual. The man of sedentary habits requires less than the man leading an active life. An exclusively vegetable diet should be advised only in the exceptional cases.

The consumption of food of all kinds should be minimized. Ben. Franklin's rule of always rising from the table with an appetite is the rule for the gouty. They should consume only enough to nourish the body and maintain its functional activity. Unfortunately for many of them, they pass into middle life with the vigorous appetite of early life and, unrestrained, lay the foundation for obesity, always a calamity for these unfortunates. Sugar, starchy and fatty foods, should be taken in moderation, because they interfere with complete metabolism of the albuminates. This is especially true of sugar; it is as detrimental to the gouty as it is to the diabetic, and for it saccharin can well be substituted, because it not only satisfies the craving for sweets, but also acts as an antiseptic and diuretic, thereby diminishing the danger of auto-intoxication and promoting elimination. The starchy foods, readily converted in the body into sugar, are as objectionable as sugar, and giving rise, as they so frequently do, to defective intestinal indigestion and resulting auto-intoxication, will lay the foundation for acute seizures. Fatty foods are of benefit to some because they satisfy the appetite, and thereby diminish the total quantity of food eaten, but, as is well known, we must remember that under the influence of fat, tissue waste is diminished and less oxygen is taken into the system. This capacity to diminish albuminous metabolism may be very well for the lean, who can digest them, but bad for those who are inclined to corpulency. Eggs should be taken in moderation; there are some in whom they will produce, in small quantities, toxic symptoms. The large amount of fat they contain places them in the above category. Cheese is to be avoided, as the most concentrated of the albuminates, and because of the lactic and fatty acids it contains. Tomatoes, asparagus, rhubarb and strawberries, tending to produce an excess of oxalates, are to be avoided. In short, the great principles to be considered are: 1, abstemiousness in all things; 2, non-restriction of the animal albuminates which are so essential to the nutrition of the body and so comparatively easy of digestion; 3, withdrawing from the dietary the saccharine, starchy and fatty foods that check metabolism and diminish oxidation.

Among beverages we must always remember milk first; it is a very desirable food. The water used should be as free as possible from mineral matter; distilled water being the ideal. There is advantage in taking it hot a half-hour before meals and at bedtime.

The question of the use of alcoholic beverages is important and often difficult to decide. There are many gouty persons who should become total abstainers, and there are others who will be greatly benefited by the moderate use of alcohols. Beer, porter, stout, the sweet and sherry wines, such as champagnes, ports, sherries, Madeira and Burgundy, should be avoided. Moselle, light hock, the light Hungarian wines and claret, especially diluted with an alkaline table water, are permissible. For many whisky, brandy, Scotch whisky, or a gin, well diluted with an alkaline water, is the best form of alcohol.

PHYSIOLOGIC PRINCIPLES UNDERLYING INFANT DIETARY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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No subject in general medicine has been more prolific of literature in the past and less fruitful of practical results in the present than the question of infant food and infant-feeding. Infancy is still a prey to gastro-intestinal disease. Thirty-five per cent. of the children born, die within the first three years of life of disorders of the alimentary tract or their sequelæ. No satisfactory explanation of this mortality has ever been given, saving that of prevalent dietetic error. No theory accounts for this condition other than this: that out of the great mass of varied experience, the medical profession has evolved no scientific system of infant dietary, has been guided by no sound physiologic principles in the selection, preparation and feeding of infant food.

After an endeavor, maintained for fifteen years, to meet this default and to remove this reproach from the practice of medicine, the writer ventures to present to this body certain foundational facts to which his daily practice has been adjusted and which an

almost unbroken success in infant-feeding and a nearly complete abolition of infant mortality from gastro-intestinal disease have sustained. The hope that one has succeeded in the solution of a problem, which others have so repeatedly failed to solve, would be rash indeed if it were not supported by the test of persistent trial. These facts will be presented in a brief outline form which will afford convenient openings for criticism.

The nursing mother and the individual nursing infant are normal elements in a physiologic equation. Under health conditions these elements are closely correlated. This correlation begins, not with parturition, but with impregnation. The metabolic changes leading up to lactation are initiated with the beginning of pregnancy. The nutritive events which occur in utero are associated with, are directive of, the metabolic events going on in the mammary gland. Evidence of this is seen in the fact that the premature termination of gestation determines an immature climax of functional activity in the breast. In the rabbit and in the cat, the writer has frequently noted the occurrence of structural changes in the gland and the rapid development of an abortive secretion of milk as the results of an induced abortion in the early stages of pregnancy. Clinical observations upon the human confirm this physiologic analogy.

It follows that errors or disorders of pregnancy are frequent causes of failure in the metabolism of the breast, are points of departure from which proceeds a future lack of correspondence between maternal supply and infantile demand. In the normal mother, after parturition, the output of the gland, both in the matter of quantity and in the matter of quality, corresponds with and varies to meet the needs of the infant. Human milk is not of stable composition, a fact which accounts for the uncertainties of analysis.

It must be insisted that this physiologic equation is, in each case, a personal one. In the same mother, with successive children, the largest variations in the quantity and in the quality of the milk-supply are to be observed and this under equally good conditions of maternal health. The quantity of the output corresponds closely with the capacity of the infant's stomach; its quality with the nutritive needs of the child. At successive stages in the entire lactation period, quantity and quality thus keep step, up to a physiologic limit, with the metabolic history of the infant.

Following in the footsteps of Frolovski, the writer has studied and recorded series of cases with reference to this correspondence. Difficult as it is to estimate the capacity of the stomach, postmortem, there is, nevertheless, a close correspondence between the results of measurements of the dead organ in infants, of certain ages, and the estimations, by graduated feeding, and by easily induced emesis immediately after feeding, of stomach capacities in the living child at similar periods of infancy. An equally striking relationship has been observed between these capacities of the infant stomach, so determined, and the measured yield to the suction-pump of the active loaded mammary glands at similar periods. Marked as are these variances in quantity, no less so are the changes in quality, in the proportions of proteids, fats and carbohydrates observed in the human milk at successive stages of lactation.

The responsiveness of the mammary gland to intra-uterine stimuli before parturition and to the infantile demands after birth is not difficult to understand when the highly developed, typical quality of its metabolism, second only to that of the germinal epithelia, is considered. Its similarly sensitive response to influences disturbant of its metabolism is characteristic and accounts for the frequent failure of lactation. Into the many causes of this metabolic failure it is unnecessary to go. Suffice it to recognize the fact and to see in this disturbed physiologic equation the necessity for the study of a scientific substitution of the normal infant food. The artificial feeding of infancy is a most delicate problem, into the solution of which enters the appreciation of those conditions of quantity and quality in the normal supply upon which emphasis has been put. But that is not all. It turns equally upon an understanding of the conditions of the physiologic demand, upon a better knowledge than has yet been attained of the digestive processes of infancy. They are not those of adult life. They contribute, not merely to the maintenance of the balance between waste and repair; they minister to a constructive metabolism which altogether overshadows destructive tissue-change. Observation alike of the feeder and the food has brought out, quite clearly, some features of infantile digestion.

In the carbohydrate field, nature fortunately provides a fully elaborated supply, for the amylolytic ferment of the saliva is inactive while that of the pancreatic juice is absent in early infancy. Consequently, the non-digestion of starch, the readier digestion of dextrins, the non-inversion and the easy fermentation of cane-sugar, the non-fermentation and the ready absorption and inversion of lactose, are the characteristics of carbohydrate digestion.

In the proteid field, the ready digestion of the lactalbumin and caseinogen of the human milk is to be noted. This is secured by the joint action of the pepto-hydrochloric acid of the gastric-juice and of the trypto-carbonate of soda in the pancreatic juice.

To Professor Chittenden of Yale University, physiology is indebted for the use of the first term, descriptive of the loose chemic combination which exists between the pepsin and the hydrochloric acid. The writer has ventured to suggest the use of the latter term as equally suggestive of the necessary association existing between the trypsin and the sodium carbonate of the pancreatic juice.

The statements of recent writers on infant hygiene that hydrochloric acid does not exist in the normal stomach of very early infancy, can be very simply disproved. It does not exist in free form, and even in the normal gastric juice of adult life is this true. It is existent, nevertheless, as Professor Chittenden has suggested, in association with pepsin. In that relation it will not respond to the usual color tests for free hydrochloric acid. When, however, by the application of heat to 65 degrees C. the pepsin is destroyed, the hydrochloric acid is dissociated from it and can then be detected by these usual tests. In a series of observations upon the gastric juice, taken from seven healthy infants during the first week of life, the writer has clearly determined the effective presence of hydrochloric acid by this method. The agents of proteid digestion exist, then, alike in the stomach and in the small bowel of the infant, even before birth.

The digestion of the proteids of cow's milk by the human infant is a very different matter. Lactalbumin and caseinogen in human milk are one thing; in bovine milk they are another. Proteids of very simi-

lar character, which go under the same names, but are existent in the several tissues and body-fluids, often demand differentiation. Creité, Lehman, Weiss and others have shown that the serum-albumin of one animal is foreign to and toxic in the blood of another and that its introduction is commonly followed by albuminuria. In view of these facts, it is easy to understand that the proteids of the milk of one species may undergo doubtful digestion in the infantile food-tract of another.

In the field of fatty foods, nature again provides an elaborated supply. The fat-splitting process is difficult in infancy and, consequently, the finer the emulsion of the fat in the milk, the more readily is its absorption effected. And in this quality milk varies. Much of the details of infant digestion remain to be determined. Some suggestions, offered by experiment upon the young of the lower animals, await confirmation. Nevertheless, these physiologic problems of infant digestion and maternal supply have been sufficiently worked out to afford the basis for a scientific substitution of human milk by artificial food in that great multitude of cases which demand a foreign supply. Into its consideration enter three primary factors.

1. Substitution must be effective in respect to *quality*. Food analysis has reached a point of accuracy which justifies the demand that food selection and food preparation for infant uses shall be essentially scientific. The market, full of manufactured infant foods, exploited in the secular and medical press as perfect substitutes for human milk and employed, upon hearsay, one after another, in the feeding of the mal-nourished babe, without so much as a personal inquiry upon the part of the prescriber into their nutritive qualities or mechanical conditions, is a scandal to the medical profession. The adulteration of infant foods with these products and the crude methods of modifying animal milk, without reference to the age and digestive powers of the infant-consumer, are curious persistencies of practice quite out of date with the general scientific progress of medicine. Substitution in respect to quality may be effected (a) by the modification of animal milk, (b) by its pre-digestion, or (c) by the use of manufactured foods. A comparison of these methods in detail is unnecessary. It is enough to express the belief that with the attainment of the scientific imitation of the human supply, for all periods of early infancy, by means of modified and pure animal milk, through such agencies as the Walker-Gordon laboratories, which sooner or later our towns and cities must support, will come the survival of our need either for manufactured foods or for the agents of pre-digestion. Only by laboratory methods can scientific modification and absolute purity be attained.

2. Substitution must be effective in respect to *quantity*. A working standard of quantities may be secured by the study of average infantile stomach capacities, at successive ages, compared with the average breast yield at such periods. The following table is illustrative, is accurate enough for guidance, and indicates that the average infant receives a large excess of artificial food.

PERIOD.	QUANTITY.
One week	70 c.c.
One month	95 "
Two months	140 "
Three months	170 "
Five months	215 "
Seven months	265 "
Nine months	300 "

While these average quantities are far less than most bottle-fed babies ingest, the writer can not endorse the contention of Dr. Rotch and others that overfeeding, in the matter of quantity, is a common cause of dilatation of the stomach. It may be doubted, indeed, if gastric dilatation is ever due to over-distension. It is rather the result of a loss of that muscular tone, of that obscure quality of tonic contraction which is the incident of the rest-period in the functional history of the stomach. This loss usually results from disordered chemic conditions within the viscus, due to the indigestion and retention of food. It has been induced, alike in men and in animals, by the repeated introduction of chemic irritants.

Fortunately, the infant stomach, both by its powers of rapid absorption and of ready emesis, resists overdistension. Moreover, distension is the natural precursor of peristalsis. It must be carried to a great excess before contraction fails of response. Excess of food quantity is a sufficiently certain cause of indigestion and of consequent malnutrition, without laying at its door problematic ills.

3. A third and most important factor in scientific food substitution is the element of *time*. Excessive feeding is the head and front of our offending against infancy, but excess is most customary in the practice of the people and of the profession at large, is most habitual in individual cases and is most destructive of infant life in the form of over-frequency of feeding. In its prevalence and in its dangers this practice is so pernicious that, beside it, excess in the mere matter of food quantity is of insignificant proportions. The period as well as the process of digestion is involved in this consideration. Error has grown out of the misconception that the term of digestion is to be measured by the length of time during which food remains in the stomach. In the infant it is peculiarly true that the gastric changes are but preliminary to intestinal digestion. The entire event, including the process of absorption, should be estimated and the physiologic rule of alternating periods of activity and repose in the digestive tract should be respected.

Human milk probably undergoes complete digestion in three hours. The best imitations of it require a longer time. The absorption of the products of digestion is not completed within this period.

In infancy, meal too often follows meal with so great rapidity that functional rest is altogether abolished. Indigestion ensues. Malnutrition or hypernutrition, which is practically the same thing, follows. A soil is cultivated in the food passages which affords good seeding-ground for pathogenic bacteria. The gastro-intestinal diseases of infancy, with their remarkable mortality, result.

In the past fifteen years clinical observation and physiologic study of this question have combined to mold, for the writer, a practice in this regard which has afforded overwhelming evidence that not even secondary in importance to the choice of infant food and of far greater consequence than the regulation of quantity, is the establishment of definite and, judged by common custom, of extremely infrequent hours of infant feeding. In nearly four hundred infants, fed upon human milk or upon carefully selected and modified artificial food, allotted to them in quantities corresponding to the physiologic standard given, and fed to them from *three to five times in the twenty-four hours*, according to the character of the food ingested, he has witnessed an attainment of weight and height, at successive

ages, far in excess of the average; he has seen the disappearance of serious gastro-intestinal disease and has recorded a mortality of but .75 per cent.

To the application of physiologic principles of infant dietary, rather than to the therapeutics of infancy, the profession must look for a diminution of infant disease and a conquest over infant death.

DISCUSSION.

Dr. C. B. VAN ZANT, Denver, Colo.—If the Doctor will permit I would like to add a fourth factor to the three he has so strongly presented—the matter of locality. With the quantity and quality of food and the intervals of feeding exactly the same, it is a notable fact that in different places the results of infantile feeding will be very different. It is one thing to raise a child artificially in the country and another in the city. Likewise differences will be apparent in different cities, much depending on external conditions. For a number of years I practiced in a crowded Eastern city; later on, in Denver. I am quite confident, as a result of observation, that infantile feeding is a much simpler problem in Colorado than in certain other sections and that gastro-intestinal disorders in infants, bottle fed, are much less prevalent and much less fatal here than in the East. I am not able to explain this satisfactorily, but venture the following points as probably important: (a) an unusually good and pure milk-supply in Colorado; (b) the common, out-door life and (c) the greater freedom from micro-organisms productive of fermentative changes in foods.

ABSORPTION VS. DIGESTION OF MILK.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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No words or argument are necessary to show the advantage of milk as a nutriment. Millions of human beings, from the cradle to the grave, have proved its life-giving powers, and untold millions will continue to use it, wholly ignorant of any physiologic facts concerning its mode of influencing nutrition, and guided only by instinct, which in animals is unerring, but which in man is often perverted by the elements of civilization.

Milk is food. Alone and unassisted it is capable not only of sustaining life for an indefinite period, but it furnishes all the elements for the complete construction of the human frame; on it alone the infant learns to talk and walk, and develops all the tissues of the system. Adults have lived on it alone for weeks or months, and by it convalescents from grave sicknesses have recovered vitality and strength. Milk is a complex and delicate substance. While composed very largely of water—87 per cent. in an average good specimen—the remaining 13 per cent. contains a variety of substances wonderfully united, chemically and mechanically, in a manner suitable for absorption and appropriation by the economy. It is not the purpose of this paper to discuss the value of milk as a nutriment, nor to study its composition or chemistry, but only to present fully a practical theory in regard to the physiology of its *absorption*, under proper circumstances, as opposed to the commonly received notion that it must undergo *digestion* before it is assimilated in the system; and to this we will immediately proceed.

Some years ago a number of observers reported the intravenous injection of milk. It is not necessary here to recount the experiments and experiences, suffice to say that reliable men have succeeded in introducing pure milk directly into the veins of patients, where it has mingled with the blood, going first to the lungs, without any thought of digestion, such as takes place in the alimentary canal. These patients lived and throve under the process.

This intravenous injection and assimilation of milk-food first called the writer's attention to the fact that milk could be thus appropriated by the system without digestion, and led to the study and development of the theory to be propounded, and which he has put in practical application for ten or fifteen years, in hundreds and perhaps thousands of cases, and which daily experience confirms in a most substantial manner. I may say that the theory has been partially presented from time to time before medical societies and to friends, and also casually mentioned in writing; and while objections have been raised, these have generally been satisfactorily met and the plan proposed has been adopted successfully by very many, who, I am sure, would gladly bear witness if they were present. I may mention that the late Drs Marion Sims and Frank Hamilton accepted the theory and acted on it during the later years of their lives, and that the late physiologist, Dr. John C. Dalton, entirely acquiesced in its correctness, and Dr. Wesley Mills, professor of physiology at McGill University, Montreal, lately acknowledged the truth of the proposition,

Recognizing that milk could enter the system without passing through stomach digestion, I began to consider under what physiologic conditions this could be effected other than by intravenous injection. An analogy to the absorption of milk was found in the chyle and its discharge into the venous blood in the subclavian vein and vena cava on its way to the pulmonary circulation. When examined microscopically the chyle is hardly to be distinguished from rich milk, and it was argued that the milk globules could pass unchanged by the same channels through which the elements of the chyle were absorbed from the stomach and intestines; the problem was to present the milk in such a manner to the absorbents that it could be taken up immediately without having it undergo the process of coagulation, caseation and subsequent gastric digestion. Remembering that the blood was alkaline, the chyle alkaline, and normal milk also alkaline, it was suggested that if the milk could be presented to the absorbents in an an alkaline state, and at a proper temperature, absorption might take place immediately without the intermediate process of digestion.

The activity of the stomach is such, as shown by the well-known experiments of Alexis St. Martin and others, that with the least excitation gastric juice is immediately poured out, which would, of course, at once coagulate some portion of the milk, and from this it would continue until all the milk was attacked, coagulated and digested. The problem was, therefore, to introduce the milk in such a manner that there should be no stomach activity and no secretion of gastric juice. Plainly then, it must be given quite apart from all solid food, or any substance or condition which could excite gastric juice. Even the least amount of acidity from a preceding meal would coagulate some of the milk and so start on the whole process of caseation and digestion.

Physiologically it is well recognized that the stomach in health does not ordinarily secrete gastric juice except under the stimulus of food At a varying period after the taking of food, the time being dependent upon the amount and quality of the food taken and the powers of digestion, the stomach has finished its task,

absorption of certain elements has taken place, some portions have been passed on to the intestine, for further action, and the stomach is found to be empty, awaiting further cause for activity. At this period the stomach loses its turgid red color, becomes paler and more or less flaccid, and its surface is bathed with more or less of an alkaline secretion, this constituting the alkaline tide. As stated, this occurs at varying periods of time after the ingestion of food; it may occur in an hour or so after a very small amount of very digestible food, or not for four, five, or even many more hours after a very heavy or unusually indigestible meal, or with very weak or sluggish digestion. This should constantly be borne in mind in connection with the plan of treatment to be proposed, otherwise failure is sure to result. It is only when this alkaline tide is perfectly secured and utilized that the real beneficial results of this plan can be secured.

The idea, then, is to introduce the milk, pure and alone, and at the body temperature, just after this alkaline tide has set in, or during its continuance, and to avoid food or any substance which could call forth gastric secretion until after its absorption has been fully accomplished. It is believed, then, that the warm alkaline milk is absorbed directly by the lacteals and carried at once by the thoracic duct into the subclavian vein, and so reaches the blood and is acted upon in the lungs before it is submitted to liver action.

In contrast to this stands the physiologic process which takes place when the milk is taken with other food and submitted to ordinary gastric and intestinal digestion. Here after being acted upon by the gastric and intestinal juices its casein passes through the state of proteose into peptone and thence through the portal circulation into the liver, to be transformed into urea.

It is difficult to present absolute physiologic proof of the mode of *absorption* of milk here claimed, as opposed to its *digestion*, under the circumstances detailed, but strongly corroborative evidence is furnished in some experiments made by Dr. Andrew H. Smith of New York, who has kindly consented to my mentioning them. Some years ago, while experimenting on kittens to determine certain facts in regard to blood pressure, he accidentally wounded the jugular vein. To his surprise, the blood from it appeared of a lighter color than expected, and in marked contrast to that obtained from the saphenous vein. Taking another kitten from the mother's breasts he opened the jugular vein and found the same condition, and, I believe, he did the same with a third nursing kitten. He says that he could never explain the phenomenon until I propounded to him the theory of milk absorption, in full, which he at once accepted and regarded as an explanation of the condition found in the kittens; the milk being absorbed at once by the lacteals was poured by the thoracic duct into the subclavian vein and found ready exit on the opening of the jugular. I remarked to him that he had supplied the one missing link in support of my theory. It would be interesting to test the condition of the stomach, after taking milk on this plan, by means of the stomach-tube, but possibly this procedure might of itself excite gastric activity, which would confuse matters and vitiate the value of the experiment.

It would lead us too far from the practical object of this paper to attempt to enter at all fully into the physiology of digestion and assimilation or to elaborate any of the physiologic chemistry of the subject. Suffice to say that this difference in the course which milk can take under varying circumstances becomes clearly evident, clinically and practically, with close and sufficient observation. Proof could be furnished by hundreds of cases in which the present writer has carefully directed this plan of taking milk and has observed and recorded the facts, Constantly those who have been quite unable to use milk in the ordinary way, have followed the plan proposed, with the most satisfactory results. In the writer's own person, milk taken in the ordinary manner and with food invariably disagrees, causing sick headache and functional liver disturbances, whereas, following the plan proposed, he has taken a quart of milk daily for ten and more years with the greatest benefit.

A few words may be added in regard to the practical features of the subject. It has constantly happened to the writer that patients have returned, after full directions had been given, as was believed, with the statement that the plan was not successful, and that it was impossible for them to take milk, as had always been the case. In some instances undoubtedly there may be such an aversion to milk, or such an idiosyncrasy in the patient, that even this plan does not succeed. But almost invariably it has been found that the want of success was due to some failure in carrying out the plan proposed; for it must be clearly understood and most strongly and forcibly declared that unless the theory is perfectly acted upon and the plan absolutely carried out as to all its details, the results claimed can not be expected. But after an experience with it of ten or fifteen years, and with the most varied and often difficult class of patients, and with many temporary failures, I again assert that when perfectly carried out results can be obtained which are of the greatest and most lasting benefit; there is hardly a single fact in medicine or feature in therapeutics of which I am more confident. It is sometimes difficult, however, to succeed at first in getting patients to carry out the plan exactly, for it must be remembered that the smallest possible amount of gastric juice or acidity will cause some portion of the milk to be coagulated; and when this digestive process is once begun, even in the slightest degree, it must go on until all the milk has been attacked and digested.

In many instances I have found that patients had taken with the milk a small amount of food, as a cracker, following the advice of a former physician or that of friends. Again, some will put an egg in the milk, or add whisky or brandy, and in many ways I have had the correct operation of the plan interfered with. It repeatedly happens that the milk is taken too soon after a meal, or perhaps even when a long enough interval of time has elapsed, it has happened that owing to a sluggish digestion, it has come upon the products of a former meal, and not during the alkaline tide. Thus, patients will often take milk at half-past ten or eleven in the morning or at three or four in the afternoon, because at that time they had felt a faint and "gone feeling" and mistook the uncomfortable sensation of delayed digestion for hunger. It will, therefore, often be very difficult to be sure that the stomach has reached the alkaline condition, when only the milk can be taken with advantage. My rule is not to have it taken longer than an hour before the coming meal, but under proper conditions it may often be taken

even up to thirty minutes before eating, although this is rare.

Sometimes, if the digestion is sluggish, it is necessary to administer pepsin or other digestives very freely and repeatedly, to secure an empty stomach early enough; and at times when there is any doubt, I have taken one or more doses of bicarbonate of soda half an hour or so before taking the milk. It is also often advantageous to put a little bicarbonate of soda into the milk, if there is any question as to its perfect alkalinity or as to the alkaline state of the stomach. But these measures will not be successful if there is food or any remains of an acid digestion.

The temperature of the milk is also an element of importance. If taken iced cold the perfect action of the plan is frequently interfered with; the effort to warm the milk in the stomach, which is necessary before absorption, will often seem to give occasion for an attempt at stomach digestion, and a sensation of pressure and discomfort will follow, which is far different from the agreeable sensations accompanying its proper use. My directions, therefore, are that the milk shall be made of the body temperature, by heating it carefully in hot water, if possible; if boiled so as to produce the slightest scum on the surface, and this is taken, it acts prejudicially by exciting gastric action, and the aim of the process is defeated. It is often desirable to warm the milk by the addition of hot water, as absorption is even more readily affected thus than when the milk is too rich and thick.

I have also often seen harm done when cream had risen, and had been stirred into the milk, forming flakes; these small solid particles being incapable of immediate absorption may result in causing the secretion of gastric or pancreatic fluid in the process of digestion.

Many of these points—and more could be mentioned—may seem trivial and unnecessary, but long experience in following the plan proposed under the most diverse circumstances has convinced me that in this, as in so many other medical matters, attention to details is of the utmost importance; and, as reiterated here more than once, it is essential that the plan be perfectly followed in every detail, in order to obtain perfect success.

When prescribing milk according to the plan proposed, pure, warm and alone, one hour before meals, patients often object that it would destroy what appetite they have. But it is an interesting fact, based on physiologic reasons, that when thus taken successfully it not only does not impair the appetite, but greatly increases it. If a particle of food, as a cracker, is taken with it, or if for some reason or fault it does not act exactly rightly, then the appetite is impaired; naturally so, because there is a process of digestion which takes a longer time than the hour, or rather half hour required for its absorption, and the stomach can not be ready for fresh food again so soon.

The physiologic basis for the improvement of the appetite is simple. The process of secretion from the glands of the stomach and elsewhere, depends largely upon osmosis and blood pressure. By the quick absorption of milk the pressure of the blood in the capillaries is increased, and a richer blood is offered for the secretion of the gastric juice. This improvement in the appetite under this plan of treatment has been observed by myself and others in dozens of instances.

A common time of administering milk with me, especially in poorly nourished females, is in the morning, one hour before breakfast, the directions being that the patient shall lie still for a quarter of an hour thereafter; it is often found then that instead of rising fatigued, with no appetite for breakfast, the patient gains in strength and enters on the day with a vigor quite unknown before. I also very commonly have weak females lie down in a darkened room for a half-hour nap after taking the milk at 12 and 5 o'clock. I could give many, many instances where the transformation of the patient by this simple procedure has been really marvelous. The soporific qualities of warm milk at bedtime or in the night are sometimes remarkable.

I trust I may be pardoned for my seeming enthusiasm in regard to the plan proposed, for it is presented after mature thought and very extensive experience, dating back many years; and I only wish to make this theory and plan so clear and plain that many may be led to adopt it in daily practice, feeling sure that if properly understood and faithfully carried out their experience will be the same as mine and that of many other physicians who have accepted and worked upon it.

4 East Thirty-seventh Street.

DISCUSSION.

Dr. ROBERT H. BABCOCK, Chicago—I desire to add my testimonial to the efficacy of milk taken in accordance with Dr. Bulkley's method. Since having learned of this way of drinking milk two years ago, I have so prescribed it to many patients, and with but one exception, I think, they have experienced no difficulty in its assimilation. On the contrary, it has been well borne, and, what was almost incredible to me at first, it has been found not to interfere with appetite for, and digestion of, the following meal. I am at a loss to explain why milk taken in this manner should agree better and apparently be absorbed or assimilated differently from when drunk at meal-time, but I am convinced that some difference does exist. So firmly rooted are the teachings of physiology in my mind that I am not able to accept Dr. Bulkley's explanation of its absorption directly, as unaltered milk. It may be that being bland and warm the milk is allowed by the empty stomach to pass through into the duodenum; but how it can escape the action of the milk-curdling ferment of the pancreatic secretion, I can not understand. Of course, the cream, or fat of the milk can be taken up by the lacteals at once, since it is already in a state of fine emulsion, while the water and the salts in solution might be quickly and directly absorbed; but I confess I can not understand, as yet, what is done with the casein if it is not subjected to digestion in the small intestine. However, my failure to understand the mechanism of its digestion, or absorption without digestion, offers no barrier to my acceptance of its clinical value when taken in the manner devised by the distinguished author of the paper.

Dr. H. W. SCAIFE, Chicago—My objection to Dr. Bulkley's theory is this: He asks us to believe milk is absorbed by the lacteals as water would be by a sponge, and is conveyed to the veins unchanged. His theory is entirely groundless; his idea of assimilation old-fashioned. The walls of the intestines do not act like inanimate membrane. "The act of seizing food," says Binel, "belongs to living tissue. It is not a chemic nor a physico chemic, but a physiologic phenomena." So it is entirely inadmissible, that by his method of administration or any other method, milk can pass through the living tissue without change. His clinical facts are good, his theory to explain which is entirely false, and if he injects milk into the veins of any animal, he will not feed it, but kill it.

Dr. C. B. VAN ZANT, Denver—Dr. Bulkley's paper, based as it is, upon such a large amount of clinical experience, the value of the method which Dr. Bulkley advocates, can not be gainsaid. With his theoretic explanation, however, of the physiology of this process we must heartily disagree. It is contrary to all the present teachings of physiology to suppose that milk can gain access to the blood-current unchanged and without previous coagulation and digestion. In the first place, we can not believe that milk in any form, or temperature, or in any manner of administration will fail to evoke an outpouring of gastric juice. The experiments of Beaumont showed that it invariably follows the ingestion of fluids, and even the gentlest

titillation of the gastric mucous membrane led to its discharge. If this be true, coagulation of the milk in the stomach is certain, no matter when or how the milk be given. If, however, we grant the possibility of the milk running the gauntlet of gastric juice coagulation and a partial digestion, what assurance have we that it would fail to excite the pancreatic secretion, by which it would inevitably be coagulated and digested? It seems to me totally untenable to suppose that the milk can enter the absorbents directly and without change. While I gladly admit that the method of milk administration which Dr. Bulkley advocates seems to have the weight of clinical experience back of it and to be valuable, the theory as to its action seems to me out of accord with the present accepted beliefs of the best physiologists.

Dr. BULKLEY, in closing, said he was glad of the criticisms which had been made, as he believed that only by frank and full discussion could truth be brought out. He had purposely presented the paper before the Section on Physiology because he wanted the theory proposed to be scientifically considered and criticised, and he should endeavor to benefit by the remarks made, and should study the subject still further.

But he would say that in spite of the objections that had been raised he should still adhere to theory as proposed until a better working hypothesis was obtained. Because, however the ultimate course of the milk may be considered physiologically, there was somehow a vast difference, greater than he could express by words, between the behaviour of milk when taken in the ordinary way carelessly, or with food, and when administered absolutely according to the principles and methods laid down. This clinical difference, which he had observed for many years—from ten to twenty—and in hundreds of instances, must have some scientific reason back of it; and, for his part, he would prefer to accept the accumulated evidence of years as demonstrating some physiologic difference than accept the statements or arguments that had been brought forward to show that the theory was untenable. Possibly the physiology was wrong—for this is a somewhat changing science—and we can not explain just how milk or indeed other aliments act under perfectly normal conditions, for it is to be remembered that experiments, on which physiology is based, always introduce an abnormal element themselves. He should, therefore, adhere to his theory as an excellent working basis, because it furnished the means of aiding in carrying out intelligently the system or plan described, which with him and others had yielded such exceptionally beneficial results.

WHAT IS THE FOOD VALUE OF ALCOHOL?

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. STUVER, M.Sc., M.D., PH.D.

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RAWLINS, WYO.

Food is described by the Standard Dictionary as: "That which is eaten or drunk, for nourishment, aliment; nutriment in the scientific sense; any substance that being taken into the body of animal or plant, serves through organic action to build up normal structure or supply the waste of tissue, nutriment; aliment as distinguished from condiment;" and Webster gives substantially the same definition.

While these definitions give what I desire to designate as the positive side of the question, there is also a negative side which should be considered in arriving at a true estimate of the food value of any substance ingested by man or animals for the purpose of nutrition. By this negative side I mean that the food substance, while containing the elements necessary for tissue-building or heat-production, should not interfere with the normal organic processes of digestion, assimilation or excretion. Nor should it interfere with the normal oxygen-carrying power of the red-blood corpuscles or impair the healthy activity of the enveloping membrane which surrounds all the tissues and cells of the body, and on whose unimpaired dialyzing power the *endosmosis* of nutrient material and the *exosmosis* of broken-down, retrograde products or toxins depend. As you are all well aware, recent investigations have demonstrated the immense importance of auto-intoxication and the very serious consequences that may result from retained toxins or waste materials. On this subject Dr. Thomas Oliver speaks as follows: "Bouchard[1] clearly indicates to us that man is constantly standing, as it were, on the brink of a precipice; he is continually on the threshold of disease. Every moment of his life he runs the risk of being overpowered by poisons generated within his system. Self-poisoning is only prevented by the activity of the excretory organs, chiefly the kidneys, and by the watchfulness of the liver, which acts the part of a sentinel to the materials brought to it by the portal vein from the alimentary canal.

In view of these facts free elimination assumes a very important place and must receive careful consideration in arriving at conclusions concerning the relative value of nutrient materials. We should inquire, not only as to the tissue-forming or heat-producing power of any particular food substance, but also ascertain how it affects digestion, assimilation and excretion, and then we will be in a position to arrive at a true estimate of its value to the system. On this basis, let us now try to ascertain the food value of alcohol. I shall confine what I have to say to ethylic alcohol (C_2H_5HO), the kind in common use.

Ever since the earliest historic times until within recent years, it has been believed that alcohol is a true tonic; that it stimulates mental activity, increases muscular force and the powers of endurance; that it enables man better to endure the rigors of extreme cold and the fervor of intense heat than he could without it; that it protects him against the invasions of disease and helps him to counteract their effects and throw them off when contracted—in short, that it elevates his thoughts, increases his powers, blunts his pains and sorrows and enhances his joys. Even twelve or fifteen years ago it was believed by many eminent authorities that pure alcohol possesses a positive food value. T. Cranstoun Charles[2] says: "As to the rôle played by alcohol in the economy there is still some difference of opinion, but the weight of evidence is in favor of the theory that it acts more or less as an aliment. When ingested in excess much of it traverses the system unburnt and is then found in the urine, sweat and expired air (Lallemand, Perrin, etc.); but when taken in a moderate dose the amount eliminated by the urine forms but a small proportion of that absorbed (Dupré); some even maintain that the quantity thus excreted does not amount to more than 0.7 per cent. (Thresh). The chief portion of the alcohol in the latter case, therefore, undergoes consumption in the body (Anstie, Thudicum, Schulimus, Baudet, etc.). We shall see elsewhere that a little alcohol is generated in the organism itself (Bechamp). Alcohol does not appear to increase the production of heat as a chemic agent (E. Smith), rather, in large amount, lowering temperature by checking some of the oxidation occurring in the body, particularly when abnormal, as in fevers. It also, when given in a state of health, tends to diminish muscular power, but indirectly the effect may be to increase it by improving the tone of the system

[1] Bouchard: Preface to "Auto-Intoxication in Disease," page 8.

[2] Elements of Physiologic and Pathologic Chemistry, 1884.

through the appetite and digestion of food. While the carbonic acid exhaled is slightly diminished when wines and beer are taken in moderate quantity, the secretion of gastric and pancreatic juices is favored, and there is a gentle excitation of the nerve centers, and at the same time an undoubted addition made in the form of salts, fats, glycerin and albuminoids—beer being not only stimulating and tonic, but also nutritious. Indeed, of the alcoholic drinks beers occupy the first place as foods; then come cider and perry, then wines, and as they sustain and increase vital action, they must be regarded as true foods (E. Smith). According to Voit, also, alcohol must be regarded as a food, as under its influence fewer substances are decomposed in the body."

"Considered dietetically," says Pereira,[3] "beer possesses a threefold property: it quenches thirst, it stimulates, cheers, and if taken in sufficient quantity, intoxicates; and lastly, it nourishes and strengthens. The power of quenching thirst depends on the aqueous ingredient which it contains, assisted somewhat by its acidulous constituents (carbonic and acetic acids), its stimulating, cheering or intoxicating power is derived either wholly or principally from the alcohol which it contains (2 or 3 per cent.—in some stronger, 5 to 7, and exceptionally 10 per cent.); lastly, its nutritive or strengthening quality is derived from sugar, dextrin and similar substances contained in it; moreover, the bitter principle of hops confers on beer tonic properties. From these combined qualities beer proves a refreshing and salubrious drink if taken in (scrupulous) moderation, and an agreeable and valuable stimulus and support to those who have to undergo much bodily fatigue."

The above quotations are given because they tersely show the opinions held by many leading physicians fifteen years ago as to the tonic and nutritive properties of alcoholic beverages. As you have doubtless perceived, however, the statements are very vague and general, and when closely scrutinized it will be observed that those beverages for which the greatest thirst-quenching, tonic and nutritive properties are claimed are the ones which contain the smallest percentage of alcohol. This fact in itself should create the suspicion that the opinions expressed were influenced to a certain extent by inherited or acquired appetites or cravings, preconceived opinions or in extenuation of existing habits.

Let us now glance at the physiologic effects of pure ethylic alcohol as determined by careful, accurate and painstaking investigations, with the aid of modern scientific instruments of precision. It is generally conceded that alcohol is almost immediately absorbed into the blood. Here it exerts a most pernicious effect on the red-blood corpuscles, dissolving their iron and devitalizing them (Dr. Wm. Hargreaves), arresting their development and hastening their decay (Drs. Virchow and Becker), as well as diminishing their oxygen-carrying capacity by lessening their power to absorb oxygen from the air in the lungs; by its strong affinity for water it absorbs a part of their moisture, causes them to shrink, harden and may even make them adhere in masses and so hinder their passage through the tiny capillaries (Dr. B. W. Richardson). While in the stomach, instead of aiding digestion, as was formerly supposed, it has been shown by many careful observers that alcohol in very small amount actually retards the digestion, especially of proteids, very much. This retardation reduces the amount of nutrient pabulum to be taken up by the blood, whose functional or selective activity as we have before seen is likewise impaired by the alcohol directly absorbed. Nor do the evils end here, because the alcohol contained in the circulating fluids on coming in contact with the enveloping membranous sheaths which surround all the tissues and cells of the body, coagulates the albumin contained in their secretions, forming a thin white film over their surfaces, thereby impairing their dialyzing power and interfering with the free ingress of nutrient material for the upbuilding and renovation of the tissues and cells as well as obstructing the free egress of retrograde products or toxins on whose prompt elimination and destruction the healthy activity of the body depends.

With the digestion retarded, the oxygen-carrying capacity of the blood lessened and the assimilation of nutrient materials as well as the elimination of retrograde products and toxins greatly impaired by the clogging of the dialyzing membranes, we would logically infer that alcohol exerts a pernicious influence on the development and functional activity of the muscular and nervous systems, besides perverting and impairing the special senses and mental activity of those who use it (effects diametrically the opposite of those produced by true foods!), and this inference or conclusion we find fully sustained by incontrovertible facts. As cogently stated by Dr. Bunge: "Thousands of experiments on large bodies of men have been made and have led to the result that, in peace or war, in every climate, in heat or cold and rain, soldiers are better able to endure the fatigues of the most exhausting marches when they are not allowed any alcohol. A similar result is observed in the case of the navies, and on thousands of commercial vessels belonging to England and America, which put to sea without a drop of alcohol. Most whalers are manned by total abstainers." Arctic explorers endure the severe cold much better when they abstain from alcohol than when they use it, even in moderation. Nor is this knowledge confined to physicians and physiologists, but the great business interests of the country are beginning so thoroughly to appreciate the fact that alcohol unfits men for doing the best work that many railroads and large manufacturing and mercantile establishments will neither employ nor retain in their employment persons addicted to the use of alcoholic beverages. That alcohol lowers muscular force and endurance is very conclusively shown by the fact that those who engage in athletic sports must stop drinking if they expect to excel. No prize fighter, ball player, oarsman or any kind of athlete can keep up drinking habits without so injuring himself in a few years that he is relegated to the rear as a back number. The careful experiments made on a number of persons by Dr. J. H. Kellog, several years ago, showed that muscular strength is diminished more than 30 per cent. by the use of alcohol, and substantially the same conclusions were reached by the elaborate experiments of Prof. C. F. Hodge, on dogs, as detailed in the *Popular Science Monthly* of March and April, 1897.

EFFECTS ON THE NERVOUS SYSTEM.

But while alcohol retards digestion, impedes assimilation and excretion, reduces the oxygen-carrying power of the blood and inhibits the nutrition of the

[3] Columbian Cyclopedia, Vol. xii.

cells and tissues of the whole body, still it is on the brain, or indeed the whole nervous system, that its most far-reaching and malign influences are exerted.

The preliminary stimulation accelerates the heart's action, thereby increasing the amount of arterial blood sent to the brain. This produces the stage of exhilaration, excitement, brilliancy and sometimes frenzy and delirium.

"Owing to the loss of contractile power of the vessels, the increased blood-supply can not be returned to the veins from the brain with sufficient rapidity, and thus there is a block, causing impediment of the circulation, which ought to be free and unimpeded, to allow duly aërated fresh arterial supplies. This is the stage of depression, of depression and collapse, when the memory fades, speech is thickened, voluntary movement ceases, sensation is dulled and consciousness fails. This process frequently repeated sets up permanent tissue changes. The covering envelope is so thickened and otherwise injured that proper nutriment can not be conveyed to the brain, and thus that organ is badly nourished. The shape of the brain cells is altered, and the physical degradation of the cerebral substance sadly impairs the intellectual and moral faculties." (Dr. Norman Kerr.)

I believe the correctness of this picture can be vouched for by nearly every physician. Indeed, good illustrations of it are constantly seen, sometimes even at medical banquets. Nor is this all, for under the influence of alcohol the brain begins to think awry. It can not think straight (Dr M. S. Holbrook), and its influence on psychic processes is curious, for while it renders them much slower, the individual under its influence believes them to be much quicker than usual (Dr. Lauder Brunton). Indeed, experiments made in Heidelberg University show that the consumption of alcohol, whether in large or small doses, produces a tendency to paralysis of the mental faculties (Dr. Adolph Barr).

In view of these facts, I am led to believe that the so-called tonic or strengthening effects of alcohol are due more to its anesthetic and paralyzing power than to any true nutritive or tonic properties it may possess. As Dr. Kellogg has very felicitously said, alcohol is a "*nerve-fooler*." It makes the person who indulges in it believe his condition is very different from what it really is. If he gorges himself with too much food, alcohol may quiet the protests of his digestive organs and paralyze him into the belief that it is aiding his digestion and increasing his strength, whereas it is doing nothing of the kind.

While he may believe that his senses are keener and his powers of endurance greater, experiments with scientific instruments of precision have demonstrated that his acuity of vision is lowered, his power of hearing reduced, his sense of smell blunted and his taste so obtunded that he can swallow fiery and even caustic liquids without wincing, and his muscular strength, which he believes to be greatly augmented, is shown by the dynamometer to be materially reduced, and even his soul-stirring eloquence and poetic flights are largely discounted in the estimation of the man who has not been imbibing.

Since alcohol thus deceives the person who uses it, and as most of the beneficial results claimed to arise from its use are based on the subjective sensations of those using it, I believe we are justified, after a careful consideration of all phases of the question, after examining the arguments for and against and applying to alcohol the same tests that we use in determining the utility of other substances used as food, in concluding that if it possesses any food value at all, it is to a very limited extent, and that the dangers connected with its use are so great and far-reaching that it, as every other narcotic poison, should only be used after the greatest possible precautions have been taken to guard against its untoward effects.

DISCUSSION.

Dr. STUVER, in closing the discussion—I do not wish to be understood as claiming that alcohol does not have any food value. The point on which I wish to insist is, that in view of the great possibilities of doing harm, every case should be carefully investigated, and alcohol should not be prescribed in any form unless we are fully satisfied that its dangers and disadvantages will be more than compensated by its good effects in the patient's case. In short, alcohol should be used with as much care as morphin, strychnin or any other poison, and not in the careless, indiscriminate manner in which it has been in the past.

ALCOHOL IN HEALTH AND DISEASE.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY V. D. MILLER, M.D.

NEEDHAM, MASS.

It is with some hesitancy that I present this subject for your consideration, knowing, as I do, the extreme differences of opinion in regard to the effects of alcohol upon the human system, especially in disease. It is over sixty years since the composition of alcohol and its effects upon the human body have claimed the special attention of chemists, physiologists and philanthropists. Since this time very many investigations and observations have been made, and numerous important and scientific works written by investigators whose names stand high in the annals of chemistry and physiology.

Among the seventy-six known elements, there is one called carbon (chemical symbol C). This element is termed an organic substance, as it occurs abundantly in living matter; it is a waste product of animal and a reconstructive product of vegetable life—that is a food for plants and an effete matter of animals. The atomic weight of this element is 12, and its quantivalence is 1, 2, 3 or 4, making it twelve times as heavy as our standard—hydrogen (H). It may replace atom for atom, or 1 for 2, 3 or 4. Owing to its great latitude of power it unites very readily with hydrogen, nitrogen, oxygen, sulphur (H, N, O, S) and their radicals, forming a great number of chemic compounds, among which are many of the new therapeutic remedies. We also have sugar, fat, oils, ether, chloroform and alcohols.

In forming these different classes of compounds carbon follows out definite and fixed laws from which it does not vary. Through the decomposition of vegetable matter a gas is generated known as marsh gas ($C H_3 H$)—methane. To this gas add OH and you have an alcohol. There are many gases to which if you add OH alcohols are formed. The alcohol (C_2H_5OH)—ethyl alchol—is the one used for medicinal purposes, and is one of the best solvents we have. It readily unites with gums and resins, dissolving them; it coagulates proteids, because of its eagerness to unite with water (H_2O), generating heat sufficient to cook the contained albumin. This is what takes place in the human tissues which contain albuminoid matter. The heat generated by contact of alcohol and living albuminous tissue first coagulates

the albumin and renders it unfit for chemic reaction.

Professor Hodge of Clark University says that alcohol retards, prevents and is destructive in either large or small doses to normal growth and development; it lowers the working power.

Dr. Chittenden of Yale University says amounts of alcohol equal to 5 per cent. are markedly injurious and retard digestion.

Drs. Zimmerburg of Germany and Marvaud of France by their experiments proved that small doses of alcohol increase the frequency of the pulse, that large doses increase at first, then diminish the heart's action; very large doses depress at first.

Professor Martin of Johns Hopkins University, in his demonstrations of alcohol on the action of the heart, says that an ounce of whisky or brandy always lessens the force of the heart, but generally increases its frequency. The habitual use of alcohol is certain to work a change in the muscular structure of the heart and arteries.

Dr. Woodbury of Philadelphia (Board of Health) says nothing in clincal medicine is more certain than that the continued use of alcohol stimulates the development of connective tissue all over the body, therefore it is a prolific source of disease.

G. Newton Pitt says 75 per cent. of the cases of alcoholic neuritis and 20 per cent. of cirrhosis of the liver was found on postmortem to have tubercular lesions; these lesions assume the fibroid form.

Dr. J. F. Pain of St. Thomas Hospital, London, says that one of the effects of alcohol is to produce an accumulation of fat in the liver. In speaking of its effects upon the nervous system he gives cases of paralysis of the phrenic and pneumogastric nerves, also changes in the peripheral nerves producing hyperesthesia, paresthesia, anesthesia, with loss of knee jerk at every stage, this symptom constituting the symptoms of alcoholic ataxia.

Dr. N. S. Davis says when alcohol is taken into the human stomach it is rapidly absorbed, carried directly into the blood, consequently it undergoes no digestion or assimilative change in the digestive organs and is not converted into elements capable of contributing to the growth or repair of the organized structure of the human body. It has been many times detected as alcohol unchanged in the blood, liver, brain, lungs, kidneys and all the other structures of the body.

Chemistry shows us that alcohol is not a tissue builder, containing none of the elements from which the tissues are made. Its use in health can not be of any value. It is true the grains from which it is made contain gluten, fibrin, etc.—elements of great importance in the development of the human system—but in the production of alcohol a chemic change is produced, so that there is nothing which the tissues of the body can appropriate to their use, consequently, from a physiologic standpoint, we are forced to admit that its use in health even in small doses is deleterious. Take, for example, a sensitive, intellectual young man, a specimen of anatomic and physiologic perfection, note the deleterious changes which the habitual use of alcohol has upon him. The blood becomes impure, as evidenced by the red nose, pimples and blotches on the face; his nervous system deranged, as evidenced by his coarse language, irritable disposition and high temper, often abusive to the mother to whom in former years he gave most reverential and respectful attention. To the wife, whom he once adored and would have given his life to protect, he becomes cold, harsh and abusive, often treating her with contempt. The children, once his pride, he neglects or often robs, and to his best friends he even becomes insulting. Will some advocate of the "social glass" explain to us the physiologic and beneficial effects of alcohol upon the brain in this case? If alcohol is of no benefit, but decidedly deleterious in health, can we find a use for it in disease?

Dr. Samuel Wilks, F.R.S., consulting physician Guy's Hospital, London, says: "I found it necessary to withstand the use of alcohol in medicine at an early period of my practice. It lowers the functions, causes degeneration of the nerve centers and produces general paralysis, trembling lips, shaky hand, unsteady walk; muscles undergo a change; heart becomes fatty, nerves hardened and thickened from neuritis. Digestive organs morbid, loathing food. Ulceration, thickening of the walls of the stomach and intestinal tract."

In speaking of alcohol as a drug I do not hesitate to say that those who give it believing it to be a stimulant are totally mistaken in its action. In mitral disease of the heart it adds fuel to the fire. There was a time when brandy was the universal medicine in fever. At the present time its universality is abandoned. A number of medical men hold fast to the old notion that brandy supports. For my part, the reasons for giving it are erroneous. At present its employment by judicious men is almost ignored, and they are certainly better practitioners than those who give it to every patient who had a weak pulse. Our knowledge of the action of alcohol in disease is almost empiric, having so few principles to guide us. So far as my observation goes, those physicians who use it in typhoid fever and pneumonia lose a large per cent. of their cases, while those who treat these diseases without alcohol seldom lose a case.

The effect of alcohol is to stimulate the heart to increased action and increased circulation and respiration. In fever we have too rapid circulation and respiration with high temperature. Why, then, give something to increase this condition? Some of our best physicians with large experience, while noting the increased action of the heart from the use of alcohol, find that its force or power is diminished. May this not be the principal cause of the so-called heart failure which many practitioners give as the *cause* of *death?* Alcohol being chemically a hydrate, must, on physiologic principles, increase the heat of the system, which contraindicates its use in all fevers. Some physicians use alcohol in their practice because their preceptor or some writer used and recommended it; others because their mothers believed in and used it, and they, perhaps without being aware of it, inherited an affection for it. In fevers we have a variety of remedies which have a tendency to lower the temperature and shorten the disease, of far more value than alcohol. Our list of tonics (not stimulants) is numerous. With a chemic knowledge of the elements of food and their different combinations we can feed and care for our patient so that very little medicine will be required. Let us banish tradition and treat our patients upon common-sense principles, then we shall have little use for alcohol.

DISCUSSION.

Dr. C. B. VAN ZANT, Denver—The question as to the status of alcohol in health and disease is a large one, and one that is arousing the greatest attention throughout the country. Like

every other question it has its extremes and a happy mean. There can be no question that the pendulum is swinging away from the indiscriminate use of alcohol as practiced in former days. This is true in our own profession, as evidenced by the fact that a large number of our best men are earnest members of the American Medical Temperance Association, which stands for a restricted use of alcohol in disease. In my judgment, we ought to deal with alcohol as we would with morphia, recognizing that it is an agent both for good and evil. I have long accepted as a maxim the terse statement of Austin Flint, Jr., that "whenever a sufficient quantity of food, to meet all the needs of nutrition, can be taken and digested, alcohol is not only unnecessary but injurious." This statement applies both in health and disease. I think it is taking up an extreme position to say that alcohol never has a legitimate use either in health or disease, and in this respect the author's views fail to meet my own. In moderate quantities it is surely oxidized, and if oxidized, it must be a producer to some degree of animal heat and force. In disease, where a "sufficient quantity of food can not always be ingested and digested," the importance of the use of alcohol is apparent, as a temporary prop to the vitality of the patient. It is only in these temporary conditions that we find its highest value in disease. As an article of diet in health it is certainly unnecessary, if not immediately and tangibly injurious.

Dr. H. R. SLACK, Lagrange, Ga.—I regret exceedingly that the author of this paper is not present, for I would like to inquire whence the quotation of Dr. Martin was obtained. It was my good fortune to have studied under Professor Martin at the Johns Hopkins University, and he taught: "According to circumstances alcohol may be either a poison or useful; when useful it may be regarded either as a force-generator or a force-regulator. It is sometimes a valuable medicine, but does no good in a healthy body. Its proper use is as a whip, to stimulate the flagging energies, and it enables the physician to win many a race for life that otherwise might be lost." Dr. Osler recommends its use strongly in typhoid fever, and in pneumonia says: "It is the only remedy in many instances capable of tiding the patient over the dangerous period." There is no substance in the whole range of medicine concerning the uses and effects of which there is a greater diversity of opinion than alcohol, some as the writer, holding that these are wholly bad and that "no good thing can come out of Nazareth," while to others it is an ideal stimulant, tonic and food. I hold an intermediate position, one that I consider the golden mean, and the position of Dr. Martin as stated before. I have seen many cases where its beneficial effects were marked. It is a well-known fact that the mortality from typhoid fever in the London Temperance Hospital has for the last twenty years been 15 to 16 per cent.; much greater than in other hospitals where alcohol is used. I believe that at present we have no medicine in the pharmacopeia that can replace alcohol as a stimulant, and in some cases its use is necessary.

DIETETIC CAUSES OF INEBRIETY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY T. D. CROTHERS, M.D.

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Inebriety is one of the most complex neuroses and obscure border-land diseases known. To the average practitioner the inebriate is simply a weak, wilful, vicious man, who has full power to do different but will not exercise it. When the inebriate is examined carefully, and all the facts of his inheritance and of his nutritional, and also mental life and growth are grouped, a uniform progressive line of disease is found. The pathologic conditions which precede alcohol and the conditions which follow from the use of alcohol, are marked in different degrees. The former are not recognized and the latter only recently have come into prominence. The use of alcohol is followed by conditions which differ very widely, and are unexplainable except by a study of preceding conditions before spirits was used. One of these conditions is heredity, that is the transmission of defects and predispositions to degenerate in certain directions, with or without special exciting causes. Another is nutrition, a third is disease and traumatism and its sequelæ, a fourth is culture and environment, and so on through a long list of causes. In all cases, it may be said that the nerve centers suffer from practical starvation, and the narcotism from alcohol is grateful in covering up the irritation and pain demands for help. In my studies the nutrition of childhood has been found to be an active cause in many cases. I have divided these into the *overfed* and *underfed* cases. In the former the clinical history would follow these general outlines: The nursing child would be surfeited both at the breast and by infant foods. The central thought of the parents would be the danger of starvation and the need of constant ingestion of food. When indigestion followed, another nurse and changed foods in equal quantities would be given Later, when the child was able to occupy a place at the table with his parents, all discrimination was left to his own tastes, the parents reasoning that the appetite was the best guide and the child's food inclinations should be followed. Anything the child called for as foods or fluids were given freely. The disturbances of digestion which follow are usually treated as weaknesses and tendency to diseases. Consumption, rheumatism, disease of the liver, stomach and kidneys, and other formidable diseases are discerned in the horizon by the worldly-wise physician. Patent foods, climate cures, changes of school and culture and many remedies are tried. Finally puberty is passed, and the digestion is permanently impaired. The appetite is lawless and without control. The body is ill-nourished. Already fatty deposits have begun. The demand for foods and fluids are mere impulses. The taste is disordered. Large quantities of certain classes of foods are taken, then abandoned. The same of fluids, teas, coffees, mineral waters, beers, wines and anything used at the table.

Indigestion and obscure or well-defined nerve failures, nerve disturbances, irregularities of sleep all follow. Then finally comes the subtle tonic bitters containing from 20 to 40 per cent. of alcohol, or the wines or whisky, and inebriety has come. The relief which spirits brings is so marked that it is continued, and then follows a rapid, sharp degeneration, and the inebriety is chronic and complex mental and physical changes appear; opium and other narcotics follow, changing from one to another. This picture is not confined to children of wealthy persons, but occurs in all the various circles of society, in the families with moderate means, and occurs among children who are obliged to begin the serious work of life at an early age. The dietetic delusions of parents are engrafted and graven in the minds of children and the end is inebriety. Some of these cases take on paroxysmal forms, after spirits are used. Thus, an attack of acute indigestion is followed by a drink craze which after a certain time subsides, and breaks out again after a free interval. They become periodic drinkers, and when they die show in the postmortem remarkable stomach degenerations. It is found that the sudden, unreasoning outbreaks of what is called alcoholism, or the use of spirits to prolonged intoxication, occur in those delusional dyspeptics who, from infancy, have had no dietetic or food control. Such morbid eaters occur often among prominent men, and when they begin to use spirits they have no power of control and are soon pronounced inebriates. In these cases digestion is early strained and stimulated far beyond the needs of the body, and the food, non-

assimilable or in excess of the demands of the organism, accumulates and becomes sources of degeneration. Overgrowths, retarded growths, defective growths, with functional derangements both of physiologic and psychologic control follow. Excessive nutrition in childhood is a cause of inebriety in later life, both with and without special exposure, and often among persons who by environment would naturally not use spirits.

The second class of cases I have called the underfed. By that I mean persons who have been practically starved in many ways the first twenty years of their lives. The starvation has come from exclusive diets used from necessity or from theory, or from carelessness and neglect. In very poor families the food from infancy would be potatoes, corn meal or pork almost exclusively, or fruits in more tropic climates, in some form of liquid foods, no variety and one article almost exclusively. In other families, from theory, children would be forced to use one class of food and no others, as for instance meats, or grains, or fruits, to the exclusion of every other class of foods. In the larger proportion of cases, carelessness prevails. Children are supposed after the nursing period to eat the same foods as the rest of the family, and are given without discrimination anything which is prepared. No care is taken of their diet, no judgment is exercised as to quality, variety or nature of foods. At one time fruit is used to excess, or vegetables, or meats, or grains, according to the supply. In the family of a country grocer three boys, after a protracted period of indigestion, became inebriates. I found that the diet of the family was largely dependent on the surplus of perishable food which accumulated in the store. At one time it was eggs, then fruits, then grains, then meats. This diet was insufficient, and states of starvation and defective growth followed which led most naturally to the narcotic of alcohol. In another case two sons of a clergyman began to use alcohol to excess without any apparent reason. The theory of the parents that excess of quantity and variety of food was dangerous, had been carried out from infancy. A limited and always insufficient quantity of potatoes and bread had constituted the daily food. When these children grew up they ate to great excess away from home. This, with starvation at home, broke up the normal nutrition, and the relief from alcohol was so great as to be irresistible. In a case of unusual mental ability where the user of spirits was of an exceptional character, and the effort to recover was of equal intensity to the craze for drink, it was found that regular, uniform diet of moderate variety of foods was medicinal. As long as his diet was mathematically uniform and unchangeable he could keep from spirits, but the slightest deviation in time of using food and their quantity and quality would destroy his mental control. It was ascertained that his mother, during pregnancy and lactation, entertained some opinions of foods and their value and put them in practice in her own case. The result was a very sensitive nutrient organization in the child, with anemic sick headache throughout childhood, great excesses at puberty in foods and drinks and continued nutritive disturbances up to manhood. Then a period of drug-taking and periodic inebriety. Now he is able to be a total abstainer only by the most careful attention to diet. There appears to be a close relation between the excessive use of meat in childhood and inebriety in early middle life.

While the facts are not sufficient from which to draw any general positive conclusions, there are many reasons for supposing that often they are as cause and effect. This appears clear in this case: The parents in a family entertained very strong confidence in the value of meat as an ideal food. It was used and urged upon the children in all forms. One boy began to drink in college and died after a short period of great excess. A sister was hysteric and became a drug-taker, and died early. Later the parents abandoned meat for grains and fruits, and three children brought up on this diet have continued well and healthy. The conditions and surroundings are the same, but the vigor of the children varied widely. Beef-eating foreigners who bring up children on this diet are astonished that their children turn to beer and wine so early. The reason is the early and deranged digestion which, calling for relief of some kind, finds it in alcohol. This question of the value or injury from meats and grains is yet to be studied and settled. After alcohol is taken to excess, the complications of nutrition are many and serious. One of the first essentials in treatment is the elimination of toxins and proper nutrition.

Foods of easy digestion with moderate variety and quantity, and taken at regular intervals are required. Concentrated foods may be useful in some cases and injurious in others. Frequent use of food and in large quantities is to be avoided.

Two conditions exist, impaired and defective nutrition and congestion from over-accumulation of toxins and waste unassimilable foods and starvation. The treatment is not by routine or specifics, either foods or drugs, but by the use of many and complex measures to meet the special conditions called for. Inebriety is not confined nor traceable to any special cause, and its treatment can not be successful by any one measure or form of drug. The unexpected outbreak of the drink craze in early life and the persistence of the use of spirits is unmistakable evidence of some central defect of nerve centers and neurons. These defects are most likely to come from nutrient degenerations in what way no one can tell, yet the facts point out a distinct relation.

The drug poisoning from alcohol, opium and other narcotics most clearly affects the nutrition, and in all cases is followed by veritable starvation and failure to assimilate the food required. Where causes are traceable to early life the degeneration is greater and the symptoms more complex. The same nutritive problems appear in all cases. The use of tea, coffee and wines at meals in early life is a starting point for both degeneration and inebriety later. Many of the most intractable cases of pronounced degeneration where the alcoholic symptom was maniacal have a history of early tea and coffee drinking. The facts fully sustain the assertion, that a large number of cases of inebriety are traceable to defective nutrition in early life. This may be both starvation and poisoning, and the extreme persistence of these states is remarkable. Thus the bad living of childhood with its defects of nutrition may appear in later life as in the following: A child of healthy parents who were killed by accident, was kept six years in the family of a German and wine drinker. He was over-fed and given wine freely at the table, and was considered sickly. Then he was taken by another family and brought up very carefully and abstemiously. After a long temperate life he retired from business at sixty, and soon after began

to over-eat and drink wine at meals, and finally became an inebriate. Many cases are traceable where inebriety began at or before puberty, or after then subsided and later in life broke out again without any special causes. The expression "sowing wild oats" often describes a period of excessive use of spirits and nutritional disturbances, and then a full subsidence and a long period of temperate living. Far down in middle and later life a recurrence of this excess period appears again and often death follows. Here there is a persistence of nutrient and poison effects, which breaks out like some masked fire which has been dormant for a long time. The appearance of inebriety is usually sudden and without any exciting causes, and the change in conduct and manner of living is unexplainable. The same methods of using spirits and the same food impulses and tastes, and same surroundings as far as possible, appearing after a lapse of a lifetime, show that early defects are not affected by time. I conclude at this point with a summary of what I have intended to make clear in this study:

1. Inebriety is a most complex neurosis. The causes are equally complex, and include all the various states of degeneration which influence and disturb nutrition.

2. Obscure indigestion begins, and for this drugs and bitters containing alcohol are used. The narcotism which follows is so grateful that it is continued.

3. Dietetic delusions are fostered in the minds of parents and children, and from this many different forms of inebriety begin.

4. Often the most maniacal and chronic inebriates are from these delusional dyspeptics.

5. Starvation is present in many of these cases. The quality and variety of foods are deficient and defective nourishment follows.

6. The uniformity of taking foods and the quality and variety are essential. This and nutritional rest and mental anxiety are important factors.

7. The inebriety following these conditions is successfully treated by elimination of the toxins and special correction of the nutrition.

8. Nutrition is a very active cause in the production of inebriety, and should receive a careful study in all cases.

DISCUSSION.

D. R. BROWER, Chicago—I am pleased to have heard the admirable paper of my distinguished friend, Dr. Crothers. No man can speak with more authority than he can on the etiology and treatment of inebriety; and what he says is as sensible as it is learned.

It is very gratifying to see so much interest being manifested by the profession on the subject of dietetics, for there is no more powerful agent in the causation and cure of disease. The recognition of the fact that imperfect digestion leads to auto-intoxication, and this to development of diseases of the nervous system, and the further fact that inadequate or improperly cooked food will produce the same result have been of much benefit to all concerned.

The publication far and wide of further facts that tea and coffee in childhood will develop a taste for stimulants that later along will produce inebriety, will save many from this dreadful state. The use of tobacco by the young may also be an important factor in this same pathogenesis.

Dr. CROTHERS (in closing)—The special object of my paper was to call attention to the injuries which always follow the use of alcohol in children. A very large amount of experimental evidence from the laboratory, in the use of alcohol on animals has been gathered for other purposes, which makes the facts conclusive. The disability and defects of children in all circles of life who have used spirits freely in childhood are to be seen in every town and country. I am pleased to most heartily agree with the speaker who preceded me, in the statement of the skill in promoting the growth of animals, in fattening them, in developing their best qualities, so highly developed among stockmen and farmers, while the development of children physically through food channels, is totally neglected. We are on the frontiers of a new field of much important work, prominent of which is to clear away the delusions which infest our conceptions of child growth and dietetics. One of these delusions is the food value of spirits and its harmlessness in early life. Our foreign population have strong views of alcohol or beer in childhood. Many others cling to the idea of stimulation and increase of vigor from spirits. These delusions must be overcome and a clearer conception of dietetics as a whole must follow, then we shall do with children what farmers do now with animals.

TUBERCULOSIS: ITS HYGIENE AND DIETETICS.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

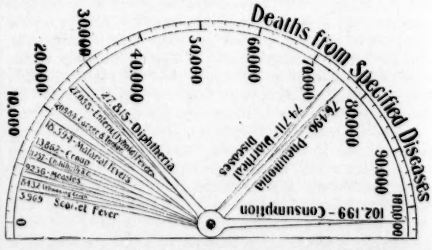
BY A. T. CUZNER, M.D.

GILMORE, FLA.

Tuberculosis in some form or other may fairly be considered the almost universal disease of man. "Schlenker made 100 consecutive postmortems on adults and children. He carefully examined every part of their bodies and found 65 per cent. tuberculous. In over 4000 successive postmortems made in Breslau in 1893, one-third of the bodies contained gross tuberculous lesions. If the microscope had been used, probably enough lesions could have been discovered to make 2500 infections. Babes found lesions of the bronchial glands in more than one-half of his postmortems on children. Biggs could demonstrate characteristic lesions in the lungs alone in 60 per cent. of his postmortems. Grawitz found primary tuberculous deposits in the lungs in 152 out of 221 cases, being nearly 70 per cent. of all infections. Loomis found the bronchial glands infective to rabbits in eight out of thirty bodies apparently free from tuberculosis during life."

Upon examination of the death records of thirteen prisons located in different parts of the country, we find the deaths from tuberculosis to be 59.9 per cent. Doubtless tuberculous deposits could be found in the 40.1 per cent. remaining.

In an article in a September issue of the *Illustrated American*, Prof. Fletcher W. Hewes publishes a dial illustrating the ratio of deaths in the United States from the most prevalent diseases. This is a reproduction of the dial.



In proceeding with our investigation of this disease, it will be as well to consider as briefly as we can: 1, the cellular pathology of the human tissues, and then in addition, what is known of the pathogenic germs thought by many to be the main cause of the disease: 2, the nature of tubercle, from which the disease takes its name; and 3, the hygiene and dietetics of this complaint.

CELLULAR PATHOLOGY.

Animal tissues are resolvable into an aggregation of morphologic units or cells, each having a life history of its own. At their death they are resolved into effete material, very deleterious to healthy cells, if retained in the tissues. Many tissues when diseased become the home of minute forms of life—pathogenic bacteria. All cells are the result of the life of previous cells, "*omne vivum ex ovo.*"

In the course of its development, every cell proceeds from the condition of a unit, in which it resembles every other morphologic unit, through a series of stages of gradually increasing divergence, until it becomes an element or part of a special tissue. The vital functions of the cell may be enumerated as follows: Contractility, irritability and automatism, reception of nutritive material and its assimilation, metabolism, secretion, excretion, and finally reproduction. All cells are sensitive to and influenced by their environment. They are repellent to deleterious influences in proportion as they possess that force or principle which we call vital. On the contrary, as they lack this force, they are open or subject to the invasion of disease. This may be in the form of toxins, or pathogenic germs, or both combined.

The healthy cells of animal tissues are antagonistic to the invasion of disease. All cells, whether of animal or vegetable origin, fulfill alike the law of their being; derived from a parent cell, they are nourished, develop, reproduce and die. During their life history they are favored or injured by their environment and circumstances over which they have but slight control.

Take, for example, cells of animal tissue exposed to contact with the atmosphere and subject to its vicissitudes, such as low temperature and sudden changes, their force (we call it vital) being reduced to a very low ebb for the time being; in contact with such cells is brought the ubiquitous microbe and there is at once inaugurated a conflict; which will come out victorious depends on various circumstances. If the animal cell has sufficient resistance, then the microbe is a failure. On the other hand, should the vitality and resisting power of the cell be very low, and other circumstances favorable, then the microbe is rampant. This may be called the irrepressible conflict sung of by the poets.

BACILLI

Bacteria, microbes, schizomycetous fungi, are minute vegetable organisms causing the different known fermentations, and found associated with certain diseases, of which they are considered by many to be the cause.

"Bacteria in shape show three varieties—*bacillus*, pencil or rod; *coccus*, a ball, and *spirillum*, a corkscrew." Tubercle bacilli are in length one-half to one-third the diameter of a red-blood corpuscle, and their breadth is about one-fiftieth of their length. (See Fig. 1 a.)

BACTERIUM.

There is a cycle of changes in the life of a bacterium that is shown plainly in the illustration. First, *a*, the spore is seen to lengthen to *b*, and forms a rod *c*. This by elongation and by fission produces more rods, *d*. These remain apart, *e*, or join together to form a chain, *f*. Some of the rods lengthen into filaments, *g*. These develop spores, *h*. The spores being set free, *i*, the series of changes begins again.

"For thirty-five years observers have noticed the bacillus of Koch living with the vinegar yeast. Botanists were divided in opinion whether they were inseparably a part of the life history of the mycoderma aceti, though nearly always found associated. Some botanists thought they were indispensable parts, and some thought not. *They are the babies of the vegetations, and can be propagated as babies.*" (Ephraim Cutter.)

"I have long ceased to regard all the bacilli, micrococci and bacteria as the ultimate forms of animal or vegetable life. I look upon them as simply the embryos of mature forms, which are capable of propagating themselves in this embryonal state." (Salisbury–McNaughton's prize essay on Malaria.)

Microbes play a very important salutary part in the science of agriculture. They act as nitrogen suppliers to the soil. They are very useful to the dairyman, causing as they do that peculiar fermentation that renders cheese so palatable. They are ubiquitous. The air we breathe swarms with them. This is proved by Professor Tyndall. The food we eat, the water we drink, alike furnish them an abiding place.

The writer's view of the functions of the microbe is as follows: The cell formation of our bodies is constantly dying, as the life force leaves it and its work is done. The same principle holds good through-

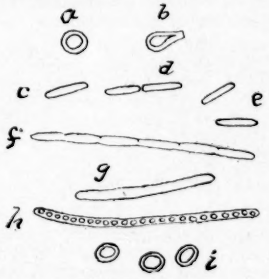


Fig. 1.—Bacterium.

out organic nature. All organic tissues undergo three distinct phases in their history—growth, decay and disintegration, and these three processes may go on simultaneously. In consequence of the dying of the cells, there is a continual accumulation of dead matter that must be disposed of by some process or processes. As one of these, the microbe gets in his work. Each microbe has his own particular work to do. In certain stages of tuberculosis we find more than one microbe associated with the disease. I do not think microbes deserve the ill repute in which they are held. When the human organism is diseased, microbes are found to be much more abundant, the dead matter to be changed and eliminated requiring much more work on their part. Like the buzzard, they are always ready to remove dead and offensive animal tissues. They also act as media of disease, just as flies do. They have likewise the power to impose upon the cell a certain amount of force, that tends to produce a condition most favorable to their disintegrating work.

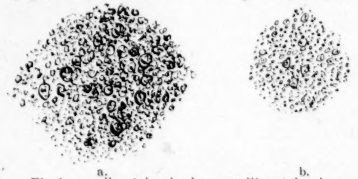
Dr. Austin Flint admitted the importance of the tubercular bacillus in disease and, as quoted by Dr. H. B. Weaver, said: "You take away their lives, when you take away the means by which they live."

Dr. Andrew H. Smith, quoted by the same writer,

said, in speaking of phthisis: "The fact should be recognized, that tubercle bacilli never become implanted in the healthy system. There is always an abnormal anterior condition that should receive our attention. . . . By sufficiently improving the nutrition, you lift the patient above the plane on which the bacillus flourished."

Solis-Cohen, also quoted by this same author, says: "To make our conception of the disease sufficiently comprehensive, we must include other elements than the bacillus and the changes in cellular structure or chemic constitution of solids and fluids brought about by its activities. . . . That condition which makes the human tissues a 'receptive soil,' a favorable 'culture medium' for the tubercle bacillus—that condition which of old was called a 'diathesis' or 'susceptibility,' is *itself* a disease, a departure from the *norm*, and I believe it to be the most important element in the morbid complexus termed tuberculosis. . . . It is the element requiring the greatest care in the prophylaxis, the most intelligent and faithful treatment."

Dr. Weaver says: "We believe this cachexia, this predisposition, which may be inherited or acquired, is a defective nutrition, superinduced by a want of vital energy, which has its correlative in the histologic expression, in the place of normal tissue, elements of abnormal condition and lowered vitality. We know that tuberculosis is not the product of a truly inflammatory process, neither is it a neoplasm, for it tends



a. b.

Fig. 2.—a, yellow tubercle; b, gray miliary tubercle.

neither to resolution and repair, nor to proliferation and persistence. It tendency is to destruction without subsequent repair. It is necrosed coagulation without blood-vessels, without cell organization, without life—*it is death.*"

Dr. Weaver goes on to say: "Therefore, we conclude with Cohen, that when, in the course of ordinary wear and tear, or extraordinary wear and tear, or following inflammation or injury, or from any cause or combination of causes, degraded tissue elements have been produced, it is highly probable that the tubercle bacilli or other microbes, finding therein a favorable soil, modify by their activity the further evolution of the disease."

Consequently, in summing up the facts, as reflected by both observation and experience relative to the causation of tubercolosis, we think we are warranted in the following conclusions: 1. Malnutrition is the starting point of tubercular process. 2. While the bacillus of Koch is, perhaps, the most important of the several microbes that influence the progress of the lesion in the various forms of the disease, yet it does not itself originate the disease in any form. 3. Both factors—the dyscrasia and the bacillus—must exist in combination before there can be tuberculosis."

TUBERCULOSIS.

In the days of my student life, it was held and taught, that phthisis pulmonalis was caused by the deposition of tubercles in the cells and tubes of the lung tissues, and the changes this material "suffers and works." While this position has not been wholly abandoned at the present time, it is now considered by a majority of the profession, that the tubercular bacillus of Koch is the main predisposing and exciting cause of consumption. The endeavors of the bacteriologist are, therefore, mainly directed to the destruction of the germs within the body and preventing access of fresh germs from without.

The following synopsis of tubercle is from the works of Charles J. B. Williams: "Tubercle presents the following characters: When first deposited it is a clear viscid, albuminous substance, becoming more and more solid by coagulation, as does fibrin, but differing from it in being incapable of organization. When more or less solidified it loses it transparency, becoming grey, yellow or drab. Uusually it is friable and of caseous consistence. Tubercle may be variously deposited in small, isolated points termed "miliary"; in granular masses, distinct or confluent; infiltrated diffusely into parenchyma; or aggregated in a mass, and enveloped by a cyst composed of surrounding tissues, thus constituting a tumor. [*The formation of this substance is merely a perversion of nutrition.*—Cuzner.] This is the commencement of the change to which the lowest forms of tubercle tend—that of maturation and softening."

Rokitansky thus describes the softening of tubercle: "After the tubercle has existed for some time in a state of crudity, it becomes, as it were, loosened in the textures, and breaks up on slight pressure and becomes more moist, then changes into a yellowish dissolving casein—like fatty and viscid matter. In the different changes in tubercular matter, as well as in the original deposition of this matter, the adjacent living parts have considerable share. A miliary tubercle from its first formation may become a cause of irritation to contiguous textures. The amount of this irritation and obstruction will depend on the natural excitability of the part, its functions, situations and size of tuberculous deposit."

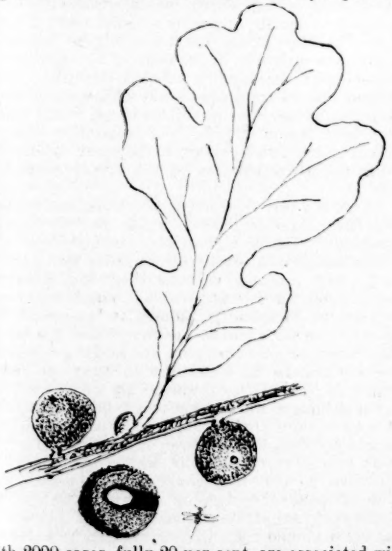
The following is from the JOURNAL, from the pen of John McFarlin, M.D.: "Tuberculosis is primarily an inflammatory process. Every tubercle begins its history as a single inflammatory node, not very different from those produced by the introduction of foreign particles in the tissues. In the early stages of the disease there is rarely any marked symptomic involvement, and many cases progress to the considerable destruction of organs before constitutional symptoms are observed. Up to a certain stage, therefore, tuberculosis is not essentially different from any ordinary or non-specific focal inflammation. It is as the disease progresses that the difference is observed; for as the cause of the disease is alive and engaged in growing and propagating its kind, there is a progressive tendency of the disease-producers to disseminate and new inflammatory foci to form; and, as growth means metabolism, there are waste products of the growth to be absorbed and eliminated.

"This is by no means all of the pathology of the disease. The tubercles develop at the expense of the organs whose tissues, transformed into or replaced by the tuberculous tissue, are unable to perform their functions or do these so insufficiently that disease must result from their incomplete action. Lastly, the tuberculous nodes, in which no blood-vessels are

formed, constantly soften and disintegrate with the frequent formation of holes or cavities, in which, if they communicate with the outer air, saprophytic bacteria are likely to grow and the harmless, or oftener harmful, results of their metabolism are absorbed into the blood. Death is more often the result of destruction of organs, suspension of vital functions from local lesions and profound secondary anemia, than from any poisonous principle in or produced by the bacillus."

INEBRIETY AND TUBERCULOSIS.

Dr. T. D. Crothers, in an article in the April JOURNAL, on the subject, "Inebriety and Tuberculosis," says: "Alcohol acts on the body psychologically, physiologically and pathologically, and is literal paralysis and dissolution. No other substance known, in common use, has such profound destructive action on waste and repair of the body. This opens the door for many diseases by destroying the power of resistance and enfeebling all the powers of life." Speaking of inebriates, he further says: "In my experience



with 2000 cases, fully 20 per cent. are associated with tuberculosis." . . . "The use of alcohol results in deranged functions and disturbed energies. The two central processes of life—waste and repair—are affected, the first increased and the last diminished."

As we stated before: All cells are sensitive to and influenced by their environment. The microbe has the power to impress upon the cell a certain amount of influence that tends to produce a condition favorable to its disintegrating work. To illustrate how it is possible for one organism to influence another so as to minister to its wants, we will state the result of some studies we have made in natural history. We will examine a common gall called "oak-apple," the result of the puncture made by a small fly called "Cynips," of the order *hymenoptera* (see illustration). Galls are vegetable deformities or excrescences, due to parenchymatous hypertrophy, and according to the definition of Lucaze-Duthiers, comprise "all abnormal vegetable productions developed on plants by the action of animals, more particularly by insects, whatever be their form, bulk or situation." The Cynips appear to prefer to puncture the limbs, twigs or leaves of the plants subject to their ravages, *that are not possessed of as great a degree of force or vitality as the remainder of the plant.* The influence of the puncture of these insects, or of the poison they inject, or of the egg they deposit by means of their ovapositors, or of all three combined, has such an effect on the infected vegetable tissue as to cause them to become hypertrophied and take on a further growth and development, by means of which the egg, larva and future fly are provided with a home and sustenance until such time as the fly is prepared to quit the gall. In addition to this (as will be seen in the illustrations from life) the grub and future fly are incased in an egg-shaped cell which is inclosed in a cavity in the interior of the gall. Leading from this cavity to the rind of the gall, so to speak, is a canal. In the ovoid cell in the interior of the gall, the grub is so placed that the future fly has its head always pointed toward the canal leaning to the exterior covering. When the fly is fully matured, it gnaws through the thin ovoid cell, and crawling through the canal until it reaches the exterior covering, punctures the same and escapes.

CAUSE OF DISEASE.

In summing up from the above examination, I think we may reasonably conclude *that tuberculosis is a disease of malnutrition of the tissue elements of the body*; that the bacillus, while it has considerable work to do and has great influence over the course of the disease, *is not the prime factor or cause.* We may further conclude from the vast clinical experience we have in evidence that there is no known germicide that is capable of destroying the microbes without causing destruction of the tissues or the life of the patient, and that all measures adopted in the past to destroy the bacilli have not obtained sufficient success to warrant us in looking in that direction with much hope for the future.

The bacilli, as we said before, are ubiquitous. If we destroy those in the body today, we have our work to do over again tomorrow. We can not continue indefinitely to act the part of executioners. Are we then to abandon the field as beaten scientists? Not while there is so much to encourage us in the clinical experience of the past.

Since writing the above, we read a curious account of the death of five out of the six Esquimaux Lieutenant Peary brought to the United States. They all enjoyed good health as long as the blubber they brought with them lasted. After it was all gone they began to pine, and successively became affected with coughs and lung troubles; finally they all died but one; this last was also expected to die, if not sent back to the arctic regions.

CURABILITY.

Notwithstanding the great mortality from the disease, overwhelming testimony is accumulating daily to the effect *that if taken in its earliest stages, before the system is exhausted by its inroads, it can, and has been, cured in numerous instances.* Again: Who that has made many autopsies but can testify to cicatrices found in the lungs, the result of the cure of a former tuberculosis? The late Austin Flint used to

teach in Bellevue, over thirty years ago, that the disease was curable if taken in its earlier stages.

The following is from the pen of E. B. Borland, M.D., and is taken from the JOURNAL. "Tuberculosis, uncomplicated with sepsis, may be considered a curable disease, in the sense that it may be held in abeyance, that is to say, kept in a latent condition for a lifetime, providing the vital resistance of the individual is kept up to the normal standard. Nature has been known to completely eradicate in a limited number of cases."

There are without doubt many more recoveries from tuberculosis than the average physician or the laity have any idea of. The postmortems of Schlenker, Babes, Biggs and Grawitz demonstrate this, as is shown in the begining of this article. It is a common belief that *no one has consumption who does not die of it.*

Continuing, Dr. Borland says: "The scientific physician will endeavor to imitate nature as far as he can interpret her methods. Investigations in search of an antitoxin have demonstrated that there is no immunity against tuberculosis when the three essential factors of infection, viz., debility, abrasions and bacilli are present. [*If there is anything in the theory of immunity a child born of an infected mother ought to be less liable to infection, other things being equal, on account of its being almost constantly inoculated with toxins during intra-uterine life.*—Cuzner.] The question arises, can tuberculosis in its latent stages be cured in all, to all intents and purposes? It has been demonstrated that two-thirds of all infections either disappear or remain quiescent during an average life. If nature can accomplish so much under the reign of empiric medicine, what will she be able to do when the physician concentrates all his energy on building up and maintaining the vital resistance of cell-life, and keeping septic germs, as well as tubercle bacilli, away from the latent infection?"

The following is also from the JOURNAL, by John Hey Williams, A.M., M.D.: "Eighteen years ago I was myself an invalid, suffering from supposed tuberculosis. I say supposed, having then no means of positive diagnosis. I was advised by such eminent authorities as Da Costa, Weir Mitchell and the lamented Pancost, that I could not live a year longer in Philadelphia, and that a change of climate was necessary. My attention was drawn to North Carolina by the writings of Hon. E. J. Aston and the reports of Dr. J. W. Gleitsman. A few months' residence in Asheville, and a more thorough knowledge of its climatic attributes, decided me to take up my residence there. With passing years came confirmed health, and I have remained eighteen years with pleasure and profit."

The careful reader of what has already been written, will doubtless arrive at the same conclusion as the writer, viz., *that this disease is caused by, or is the result of, malnutrition of the tissues involved;* that the microbe takes an active part in its manifestations, and that the disease is curable.

As to the treatment indicated: Shall we endeavor to destroy the microbe, and with this object in view continue to experiment with *serum therapy*, or shall we by a rational system of hygiene and of nutrition, build up and fortify the system against the inroads of the bacillus?

As to hygiene: There can be no doubt that an abundance of pure air and sunlight go a great way toward arresting this complaint, therefore those afflicted with this disease in its earliest stages, should by the advice and direction of their physician, seek that country where the largest amount of each can be obtained during the year.

CLIMATE.

There has been considerable difference of opinion, and much discussion as to the most desirable climate for preconsumptives. The writer prefers Florida as a place of residence for such, for the following reasons: 1, in Florida there are more days in the year in which it is possible for a patient to be out in the open air and enjoy the sunshine, than can be found in any other State; 2, the climate and temperature are more equitable than in any other State. This is my personal experience of ten years, and is in accord with the reports of the U. S. Weather Bureau. However, each patient has idiosyncracies of constitution which render him or her a law unto themselves in this respect as to climate. Some patients do better in mountain air, while others receive much more benefit from a voyage on the ocean. Some are better served by a dry air, others by a moist one. I think it may be safely affirmed that the average individual but seldom uses over 75 per cent. of the air-vesicles, 25 per cent. remaining in a collapsed condition. These unused vesicles are prone to take on disease. I hardly need remind any one that failure to use means partial paralysis. Again, the object of respiration being to obtain a supply of oxygen to be used in the vital functions, any diminution of the supply means low vitality.

There is a very instructive article in the *Medical World* for October, 1897, of which the following is a synopsis: "Dr. W. F. Ball, Mountain Station, Ohio, writes that in 1851-2, he contracted a dry, hacking cough, with morning expectoration; had chills and hectic fever for months, and lost much flesh; was pronounced by several physicians as incurable. At this time an old Canadian doctor visited his father. 'He examined me thoroughly, and said there was only one way to save me, which was to carry out his instructions faithfully. I was to sit up in bed and throw shoulders up and backward, filling the lungs with air to their utmost extent, until pain would warn me to stop; then to press down on the air to make it fill every cell. The closed cells, which were sealed by adhesions so that they could not be opened, were thus surrounded by healthy cells, and the diseased tissue would suppurate and be thrown off. It worked exactly as he told me. I have practiced these inhalations for over 40 years, and I can now, at the age of 62 years, expand my lungs to such extent as to increase my chest measure five inches, and I never have a cough to trouble me.'"

HYGIENE.

It was formerly held that breathing the same air with a consumptive was highly dangerous. It is now believed that only the desiccated sputa breathed into the lungs is infectious. There can be no doubt that a certain amount of morbid material is exhaled with each expiration. Carefully conducted experiments with the condensed moisture from crowded auditoriums prove this. Very highly offensive putrid albuminoid substances have been obtained in this way. Crowding consumptives into large sanitariums, in my opinion, is not good practice. Far better for such patients to live in homes by themselves and attendants.

"Sunlight is nature's disinfectant, and experiments have shown that direct exposure to its rays for a few hours will destroy such germs as tuberculosis. The old method of exposing infected linen, carpets, etc., to the sun has thus been proven of value, and the rays of the sun must often destroy many of the bacteria present in infected hospital wards. This influence is also beneficial in destroying many of the bacteria deposited upon the surface of the earth, and even the upper layers of rivers must be somewhat purified by the agent." (Prof. A. C. Abbott, Philadelphia.)

The sputa should be received into paper receptacles to be afterward burned. We find in nature, that living beings, animals, plants, and living tissues, whether of animal or vegetable origin, are continually undergoing certain processes, viz: growth or development, decay or death. Both these processes go on simultaneously. Professor Hammons says: "If we could perfectly adjust these so as to balance each other, man might live on forever." By a partial adjustment, we have increased the average longevity several years.

If the excreta of any kind are retained in the tissues, they produce disease, which is a slow form of death. If, after they are removed from such tissues, they are absorbed or applied to other living tissues they produce disease. If not thus absorbed such *excreta* undergo further change or decomposition when exposed to the action of heat and moisture in the open air, evolving during such process foul gases very injurious to life. But when placed in that great stomach of nature—Mother Earth–they are so digested that they are capable of becoming, by the absorption of different plants, parts of living organisms. In densely populated communities the sewerage system of disposal of excreta is adopted.

In an editorial in the London *Lancet*, the editor, in speaking of the sewerage system says: "After all, it is not a perfect success. Besides defiling the Thames to such an extent that the stench from it is quite perceptible, the gases that arise from the opening of the sewers at every corner, and are inhaled by the passers-by, are largely the cause of the many cases of diphtheria and typhoid fever which exist in this city."

It is a query in my mind whether it may not be better for us to modify our plans of disposing of the excreta and waste material of cities; whether the sanitary laws adopted by the Jews under the instruction of Moses would not be better. We find that the Jews had their Gehenna, or hell fire located in the valley of Gi Hinnom, outside the walls of Jerusalem. In this fire was consumed all that was vile and likely to taint human life. Without discarding the sewerage system, might we not supplement it more fully than is done at present by the crematory system of disposal of all offensive substances? In the family this process might be more largely used. Let everything be burned in the stove that can not be passed down the sewers, or buried deeply in the ground, if they live in the country. Col. George Waring of New York states that "the foulest sewerage water passed through ten feet of clean sand comes out clean and pure." This brings us to the consideration of a water-supply.

PURE WATER.

It is very important that tuberculous patients should have an abundant supply of pure water. Water being a universal solvent of organic material, it is therefore very necessary that no filtration from closets or cesspools be allowed to contaminate the source of supply. I prefer and instruct my patients to drink large quantities of hot water, as I believe this promotes excretion of deleterious substances from the body, and adds to its functional activities. Frequent bathing of the body is of great use to patients. A sponge bath at night will often allay excitement and give patients rest.

EXERCISE.

Light exercise should be indulged in as far as the strength will permit, especially lung exercise. Many individuals with lung trouble have been cured by learning to play the cornet.

DRUG THERAPY.

Every qualified physician will administer such drugs to his patient as may be required by the particular phase the case may present from time to time. Before leaving the therapy of this complaint I will record my experience with those medicines we may properly call reconstructives; viz., nuclein, either Auld's or Vaughn's or the protonuclein of Reed and Carnrick. Either of these should be administered continuously for months, even after the patient has seemingly recovered from the complaint. The administration of these preparations appears to be, to increase and improve the blood elements of the body.

DIET.

We now come to what, in my opinion, is the most important part of the treatment of tuberculous patients, viz., the diet. With regard to diet, it should largely consist of animal foods. Of these, eggs and milk should preponderate. I prefer to give eggs raw when tolerated. The albumin of the egg is similar to blood albumin, and is digested, or rather, it is absorbed into the blood without undergoing an elaborate digestive process. I have found the white of the egg mixed with water, tolerated when the yolk could not be borne by the stomach. Bone marrow of the ox is of greater value than cod-liver oil. Good creamery butter should be used freely, and to accomplish this result it should be spread *thickly on very thin slices of bread*. Heavy meals should be avoided, but food should be partaken of in small quantities between meals.

Beef feeding, as introduced by Dr. J. H. Salisbury, and largely practiced by Dr. Ephraim Cutter and others, is a wonderful power for good in the nutrition of consumptives. Beef-tea made from beef-extract, I consider positively injurious. It taxes unduly the excretive functions of the body, and has very little nutritive value. It is largely stimulating in its action. When I use beef-tea in my practice I have it prepared as follows: Take a small quantity of gelatin, say about one teaspoonful, and dissolve the same in a cup of hot water. When dissolved add a small quantity of extract of beef for flavoring and stimulating purposes, then add a little salt and pepper. Fruit should be partaken of freely. In fact, the aim of the physician should be, to endeavor by means of all the resources that the science and art of medicine has placed at his disposal to add to the digestive and assimilative powers of his patient, and thus give him or her the greatest chance for a cure of the diseased tissues. I might continue this subject of feeding indefinitely, but enough has been written to show its supreme importance.

INFLUENCE OF THE MIND UPON THE BODY AND ITS RELATION TO EDUCATION.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY RANDELL HUNT, M.D.

CHAIRMAN OF SECTION ON PHYSIOLOGY AND DIETETICS, A. M. A.

SHREVEPORT, LA.

Involving, as this subject does, a comprehensive knowledge of the brain, nervous system and body, their relations and inter-relations, connections and nice dependencies, an overestimate of it is impossible. Though its importance has been recognized for centuries in all the great philosophic treatises of the Aryan peoples, the ideas presented in them have been so entirely spiritual and ethical as in no way to suggest the existence of the psycho-physical law underlying the whole.

The first to clearly perceive and appreciate the existence and potentiality of a psycho-physical law underlying the phenomena arising from the influence of the mind upon the body were Unzer and John Hunter. Since their time, the subject has been ably studied by such men as Muller, Elliotson, Laycock, Braid, Carpenter, Tuke and Haidenhain, who have assiduously devoted their lives to the scientific elucidation of this problem upon purely psycho-physiologic principles. Such is the fruit of their inestimable labors, that the medical profession gives to these workers its highest gratitude and respect, and perceives in the future development of man the raising of a monument to them more lasting than stone, for their researches have practically established the fact that no mental modification can occur without a corresponding change in the body.

A primary purpose of this paper is to demonstrate that through Intellect, Emotion and Will the mind exerts an enormous influence for good or for evil upon the sensations, movements, and organic functions of the human body.

Intellect is the power of the human mind that adapts means to an end, guides the feelings, and enables its possessor to find out and act through knowledge. It acts upon the body more particularly through imagination, with which expectation, sympathy, belief, faith, imitation, and hope are closely associated. Attention also plays a remarkable part in consciousness, in its relation to physical phenomena, and though in one form, an act of the will must be included under this head, prolonged attention giving clear consciousness and good memory, while mind, through attention, concentrates and perceives itself—knowing, feeling and willing. The persistent development of attention is one of the most important and practical factors of successful education, increasing, as it does, the natural growth of perception and conception, which are aptly termed by James the very backbone of our thinking.

The production of psycho-physical phenomena through active attention was understood by John Hunter, who says: "I am confident that I can fix my attention to any part until I have a sensation in that part;" while the power of ideational upon sensational centers is affirmed by Muller, who shows that "ideas do not act merely upon the motor apparatus by which they are expressed, but as frequently affect the organs of sense, which then present sensorial impressions or images of ideas." Insensibility to physical pain occurs when the attention, modified by expectation, is powerfully arrested in a specific channel, the body failing under the circumstances to appreciate even the application of strong stimuli. "During the year 1862," writes Dr. Braine of Charing Cross Hospital, "I was called upon to give chloroform to a very nervous and highly hysterical girl, who was about to have two sebaceous tumors of the scalp removed. On going into the operating theater, it was found that the bottle containing the chloroform had been removed to the dispensary, and on testing the Snow's inhaler, which at that time I was in the habit of using, I found it to be quite devoid of even any smell of chloroform. Then, having sent for the bottle, in order to accustom the girl to the face-piece, I applied it to her face, and she at once began to breathe heavily through it. When she had done this for about half a minute, she said: 'Oh, I feel it, I feel that I am going off,' and as the chloroform bottle *had not arrived*, she was told to go on breathing quietly. At this time, her hand, which had been resting across her chest, slipped down by her side, and she did not replace it. I thought I would pinch her arm gently to see the amount of discomfort her hysterical state would induce her to bear. She did not notice the pinch, and to my surprise, did not seem to feel it at all. Finding this was the case I asked the operator to begin, and he incised one of the tumors, and then as the cyst was only slightly adherent, pulled it away. The doctor then tried the same experiment again, and without any trouble or pain removed the second tumor."

The rejection of the contents of the stomach as the result of expectation is well exemplified by an experiment made by Dr. Durand. He gave sugar-water to a great number of patients at a hospital; then, pretending alarm, said he had made a mistake and given an emetic, the immediate result of which statement was to cause four-fifths of the patients to be really very sick.

2. Emotions are our capabilities to feel in view of ideas; are occasioned by knowledge, and "are strung on ideas as pearls on threads of gold." Some of the emotions look to self and are called "egoistic;" others are termed "altruistic," because they look to others, but the emotions that look to the truth-world and duty-world are called "cosmic," and by physiologists are located in the optic thalamus, quadregemina, pons, and medulla. They act through the cerebrum, upon which they are dependent for ideas, and through the sensory ganglia, by means of which are produced the feelings with which they are associated. That the medulla is the seat of the emotions suggests naturally that undue excitement, in whatever way caused, produces through the vagi and other nerves that arise from it like effects upon the organs to which they are distributed. Emotion may act upon the sensory glanglia and centers of the nerves of sensation, thereby producing any of those sensations ordinarily induced by impressions upon their periphery; and, though really central, these sensations may be referred to the periphery by the terminals, endings of the nerves. Claude Bernard asserts that the same nerve may transmit the sensory current in either direction, to or from the brain. Other emotions occur, due to the influence exerted upon the sympathetic nerves, as in creepiness from fear. Shakespeare describes the effect of shame upon the ear in the following couplet:

Mine ears that to your wanton talk attended
Do burn themselves, for having so offended.

Prof. Ball of Paris tells of an unfortunate fellow that had a quarrel with his mother-in-law and fell into a violent passion. Full of emotion, he went home intending to tell his wife, but to his infinite surprise, found that he was dumb. Treatment, however, soon restored him to a normal condition. Contrast the mild expression of Humility with that of Pride. Fear expresses itself in cries, tremblings, and palpitations, while Courage is bold, quick and firm.

The heart, blood-vessels, and blood are materially affected by different emotions, as are also the lungs, ureters, bladder and urethra. Dr. Beaumont found in case of the man with a fistulous opening in the stomach, that anger caused its inner coat to become red, dry and irritable, always producing an attack of indigestion. It is well known that the menses are arrested by emotions of a violent character, and that infants suckled at the breast of an angry mother, have been known to be made very ill. Jaundice has been caused by the emotions of fear and pain; a fact which can be explained by assuming that the vaso-motor dilators have been stimulated, thus allowing, or rather forcing the bile into the blood, its pigment being by this channel disseminated throughout the tissues. Pleasant emotion increases functional activity, promotes metabolism, and actually renews, improves, and invigorates the mental and physical being; though its scientific appreciation consists not only in its recognition, but in its substantial application to the improvement of mankind through educational methods and otherwise.

3. Will is the capability of self-direction, self-determination, and self-action; and makes of man a free agent, subdues the force of violent impulse, and guides the intellectual powers. It acts through the cerebral cortex, striated body, and pons. In health and disease the will can control within certain limits the reflex action of the voluntary and semi-voluntary muscles, while in the early stages of insanity there is often a violent conflict between the will and automatic cerebro-muscular action. All familiar with physiology are aware that by inflating the lungs and by an effort of will restraining respiration, the action of the heart can be almost entirely stopped, producing, however, if too long continued, complete collapse. Colonel Townsend once illustrated his power, through will, to simulate death. Drs. Cheyne and Baynard felt his pulse, and found it sink gradually until, finally, they were unable to detect the slightest evidence of life.

The power of volition over the body cultivated by the fakirs is authenticated by English officers and medical men, Dr. Carpenter giving in his physiology the case of a Yogi that by will suspended the organic functions, was buried for six weeks, disinterred and resuscitated. John Hunter says: "The state of the mind is capable of producing disease; another state of it may effect a cure," meaning by this to imply that one kind of emotion is capable of removing a disease produced by another kind of emotion. Dr. Tuke, therefore, thinks it would be more correct to say "that, as in health certain mental states induce disease, so in disease certain mental states may restore health." Such a statement as the above illustrates the importance of this subject not only to medical men, but to teachers, who will discern at a glance the beneficial effects of certain ideas, feelings, emotions and volitional impulses upon the minds and bodies of children, as also the detrimental effects of certain others. Practically, the true civilization of future centuries and the continued evolution of the human race seems placed in the hands of mothers and teachers.

Most important is it that we should recognize that through a scientific and judicious observance of nature's laws, in education, in government, in social intercourse, there is attainable a physical, mental and moral perfection that has heretofore been esteemed a mere idealization of the enthusiastic devotee of ethics or religion. That this is a fact is demonstrable through the correlative sciences of physiology and biology, which daily illustrate the dependence and interdependence of mind and body. To the student of nature is proven hereby the absolute necessity of a comprehensive knowledge of these sciences on the part of teachers; through the careful and judicious stimulation of ideas and emotions they may arouse and develop only what is good in the nature of the child.

A realization on the part of instructors of the benefit to be derived from moderate benign emotion, and the contrary effect of malevolent emotion, is bringing about radical changes in prevailing methods of education. All true methods recognize as fundamentally necessary the cultivation of the nervous system through an assiduous observance of hygienic dietetic and physiologic laws, associated with well-regulated efforts toward self-knowledge, self-control and self-perfection. Froebel held essentially the same views, views based on the unity of nature with man, of man with God, of God with all, and the consequent psycho-physiologic building of the inner self. Thus, through the enunciation and demonstration of universal truths, there is being rapidly evolved a new system of sociology and education based upon the grand unity of all, and showing as necessary to the evolution of man the knowledge of mental and physical laws. With such observance will come an era of true manhood and womanhood, showing in lives lived after the pattern of the Master the divine and indwelling spirit of the Father.

DISCUSSION.

Dr. J. F. PEAVY, Atmore, Ala.—Personally, I desire to thank Dr. Hunt for his very excellent paper. I am myself, to some extent, a student of mental phenomena, and am especially interested in this very matter of the mutual relation and dependence of mental processes and physical states. Much of the confusion into which we are liable to fall in the study of this subject, may be avoided by simplifying our conception of mind and body as related to each other. We have been accustomed to regard them as distinct existences, capable of being separated from each other and of pursuing independent activities. Until we rid ourselves of this vagary it is clearly impossible to reach any theory of mental and physical correlation, or any logical explanation of modifications produced in either mind or body by influences impressing the one through the other.

Man is a unit, an organic whole. Certain of his higher physical activities we distinguish as mind. The appetites, the desires and inclinations, the likes and dislikes, the hopes and expectations, are generated in nutritional states of the organism. Upon these are based the higher mental and volitional activities. These affective states are at the same time the cause and the expression of the moving of the organism in the direction of ends in the environment which it deems good. In the pursuit of these ends, innumerable adjustments to conditions are effected in the central mechanism, the brain. Many of these adjustments are performed consciously and intelligently, while others are performed subconsciously and automatically. Those adjustments which involve the element of conscious intelligence are on their subjective faces mental states, yet they are nevertheless expressions of brain action.

Mental states are correlated with definite physical processes in the brain. You can not call up the one without producing the other. Furthermore, these physical processes being affections of the central organ of adjustment, have connections and relationships which make them centers of influence affecting more or less remotely the various organs and functions of the body. Thus the mind, or as I prefer to call it, mental action, influences not only the automatic functions of the brain, but also other bodily functions relegated for the most part to lower centers and controlled only indirectly by the brain through an exercise of inhibitory influence over them. Indeed, influences coming through the psychic life are constantly impressing themselves upon the physical organism and taking the shape of normal physiologic activities. Only the curious abnormalities which now and then arise attract our attention and excite our wonder. In our amazement at these illustrations of perverted action, we are in danger of overlooking the fundamental facts of mental and physical correlation in the human organism.

Certainly there is no more inviting study than that of mental phenomena from the standpoint of the physiologist, nor are there any more important therapeutic questions than those which relate to the proper handling of deviations from the normal in this department of vital activity.

Educators quite generally are now realizing the importance of a knowledge of psychology as part of the mental equipment of the up-to-date teacher. Quite generally, too, is the fact being recognized that the psychology which has value rests upon a physiologic basis. The question of the influence of mental impressions and mental exercise over physical development and activity seems scarcely to receive the attention at the hands of educators which its importance deserves. The alternative question of the influence of physical training and development over mental health and efficiency is receiving, and quite justly too, considerable recognition in modern methods and theories of teaching. Physical culture, drawing and other methods of developing manual dexterity have fully established their value. They serve to develop the motor capacities of the central organ of adjustment. They tend to make men of action prompt to meet the exigencies of life as they arise.

Dr. E. STUVER, Rawlins, Wyo.—Everyone appreciates the great influence exerted by the mind upon the body and the converse influence of the body on the development and integrity of the mind. I shall not enter into any general discussion of this subject, but desire to call attention to one phase of the question which I regard as of very great importance in the application of educational principles. The point which I desire to emphasize is that the child should not be regarded as a little man or woman, but rather as an epitome of the development of the race. If we recognize the fact that its ontologic or individual mental development corresponds to the philogynetic or racial phases of development, through which the race has passed in reaching its present stage of evolution of the mind, we will at once appreciate the fact that, in order properly to direct the evolving mind of the child through its various ages of credulity, inquiry and faith, up to the fully developed age of reason, that the teacher should have, at least, a clear outline conception of the mental evolution of the race. I desire to congratulate the author on his exceedingly interesting and valuable paper.

Dr. L. DUNCAN BULKLEY of New York said that the influence of the mind over the physical frame is an established fact of which it is often very interesting to observe illustrations.

The ready control of the vascular system, as seen in blushing, often upon mental suggestion, or the paling of the countenance from fear, and the cold sweat occurring under mental emotion, are known to all. I have seen a number of cases where localized sweating of the hands or feet occurred most readily upon mental influences. When the mind was diverted the parts remained dry, but when attention was called to the part the perspiration oozed out and even ran off the part. But mental influences can go farther, and even produce direct lesions of structures in various organs, and he mentioned an interesting case reported by Leloir, where fright caused the sudden and severe development of eczema.

Mental influence can also act in an inhibitory manner and arrest secretions, and probably also check nutrition. He mentioned a very interesting case of a perfectly healthy young lady where the shock of a proposed slight surgical operation completely arrested digestion, so that a simple breakfast was vomited unchanged fully seven hours after it was taken, the suggestion of the operation and visit to the surgeon occurring on rising from breakfast.

The influence of the mind has undoubtedly much to do with recovery from disease, and Dr. Bulkley thought that some of the benefit resulting in the practice of specialists was in the influence of the mind in the way of hope and expectation.

SMALLPOX IN CUBA.

THE EPIDEMIC IN THE HOLGUIN AND GIBARA DISTRICTS OF CUBA, INCLUDING A BRIEF REPORT OF THE SANITARY CONDITION OF THE TROOPS IN THE DEPARTMENT.

BY R. S. WOODSON, M.D., U. S. A.
MEDICAL INSPECTOR DEPARTMENT OF SANTIAGO.

The harbor of Gibara is a small, open one and well washed. The town of 10,000 inhabitants, a walled city nicely laid off with cleanly streets, presents a pretty seaport, which, with the assistance of constant sea breeze and sanitation can be made a perfectly healthy spot for occupancy by troops.

The town and vicinity were carefully inspected for a suitable location for camp grounds, and the most suitable site selected, i. e., the open point of land to the seaward of the city occupied by a small Spanish fort—a level promonotory in close proximity to the only available water-supply, consisting of a large, well-cared-for public cistern. The camp was nicely laid out, the fort taken as a guard-house and carefully disinfected, and an adjacent empty house designated as a hospital. Inasmuch as smallpox was prevalent in the city the command was placed in rigid quarantine, and it is recommended that no more troops be sent to this district until the sanitary situation can be controlled.

The mayor and health officers were next visited, and I was informed that for the past three years the city had been badly infected with smallpox and dysentery, that there had been over 1000 cases of the former with 250 deaths since Jan. 1, 1898, and that there had been over 800 deaths from all causes during that period. I took charge of the sanitary situation at the request of the military commander and instituted the following *reforms* and measures:

1. The Red Cross supplies, which were abundant, and which had been withheld from distribution by the Red Cross agents, were seized by military force.

2. An isolation hospital of 100 beds, fully equipped from Red Cross supplies, was established outside the city walls in the direction of the infected district.

Fifteen male and female immune nurses were employed at twenty and fifteen dollars respectively; an immune guard of eight men under charge of Sergeant King (M.D.), Company G, Second U. S. V. Infantry, were detailed as a permanent guard and acting hospital-corps detachment. Captain Massie (M.D.), Company G, Second U. S. V. Infantry, was placed in command. In two days forty patients were isolated and under treatment. The shed building, 300 feet long, was divided and subdivided for white and colored, and male and female. Two efficient cooks were employed and a well-stocked commissary established from Red Cross supplies. A detention hospital was then established in an adjacent building, and a large house on an adjacent hill was rented as a paying hospital for female patients of a better class. All infected houses of present and past cases were marked with a red cross to be disinfected. Just beyond the city wall is a settlement of 350 people in small thatched huts, badly infected and containing many cases, which will be isolated. At the suggestion of the commanding general of this department, these huts will be used for isolating purposes for the entire infected district and afterward destroyed. The Spanish hospital, well constructed and fairly well supplied, was seized and the goods confiscated for the use of the medical depart-

ment. The building is not used yet on account of infection, but is recommended as a general hospital for troops stationed on the north coast of Cuba. It is believed that the city of Gibara will become a health resort when the epidemic of smallpox now in existence there shall have been controlled.

Holguin, the principal city of the district, is similarly infected, and in much worse degree, there being in that town of 10,000 inhabitants, 800 cases of smallpox at the present time, and a correspondingly large number of cases of dysentery, typhoid fever and malaria cases. All civil government has been abandoned in this city, and its sanitary condition can be judged from the fact that 12,000 Spanish soldiers occupying the city have not established privy sinks. The situation in this district is grave and demands prompt and efficient action. The absolute necessities are: thorough isolation of patients and suspects; disinfection of infected foci; quarantine against infected adjacent districts; maritime quarantine; abundant disinfectants; medical supplies; rations for Cuban poor; 1000 cots with sheets, pillows, blankets, etc.; vaccine lymph for vaccinating 10,000 inhabitants; an efficient corps of physicians as a vaccinating and disinfecting committee, and a sanitary corps of civilian employes for thoroughly policing the city.

It is believed that with proper support, the situation in Gibara can be controlled in one month; in Holguin in two months and in the whole district in three months.

On October 29 I proceeded on horseback to inspect the sanitary conditions of the various hamlets along the line of the Holguin and Gibara railroad between these two cities. Parenthetically I will remark that there was an excellent dirt road and a beautiful open, fertile country.

Bahia de Rio Blanco, a small hamlet, 30 thatched huts, 200 inhabitants, six miles from Gibara. No smallpox, the disease having exhausted itself; all huts infected.

Arroyo Blanco, eight miles from Gibara, 300 inhabitants. No smallpox at present; 100 cases in past year, with many deaths; all huts infected.

Cantimplora, five miles from Gibara, a town of 600 people. No smallpox, the inhabitants having exercised some precautions against the disease.

Tondinga, 500 inhabitants, ten miles from Gibara. No smallpox in town at present. No history of past epidemic obtainable.

Auras, twelve miles from Gibara, a town of 1000, at present occupied by Spanish soldiers, contained many cases of smallpox of virulent type.

Aguas Claras was next inspected as a probable location for troops, four miles from Holguin, at present occupied by Spanish soldiers. Water-supply very deficient; there were many cases of smallpox; all huts infected; locality as a probable camp site abandoned.

It is advised, first, that the remaining six companies of the Second U. S. Vol. Infantry be temporarily withheld from entering infected districts; second, that the six companies now in Gibara be held in quarantine at that point and that they do not proceed as yet to Holguin.

Having done everything in the premises with the means at hand, I next inspected Sagua de Tanamo. The latter town is somewhat inaccessible, necessitating twelve miles of travel in a row-boat to the landing, Esteron, at head of Sagua de Tanamo Bay; then ten miles on horseback to the city of Sagua. At Esteron is located the commissary store-house, under guard of three men. It is a filthy little hamlet of 300 inhabitants, where malarial fever is rife. All men who have been on duty at this place are invariably afflicted with malarial fever. I would recommend that these stores be moved up to Sagua with the company on duty there, to avoid the necessity of the above exposure. The road from Esteron to Sagua is in good condition. Basan, a small hamlet of 250 inhabitants, half-way to Sagua, is a healthy little town, containing no smallpox nor malaria.

Sagua de Tanamo, a town of 2500 inhabitants, situated on a high, well-drained hill, in the midst of a large, fertile valley, now under cultivation, giving the best evidence yet seen of marked regeneration from the effects of the war, is a comparatively healthy town. The water-supply is taken from the Sagua River, a clear, bold stream, running through the valley. The town is garrisoned by Company L, Third U. S. V. Infantry, under command of Major M. W. Harris, of that regiment. Acting Asst.-Surgeon W. H. Reynolds, in charge of the medical department, a faithful, hard-working, practical man, has established a good hospital in a rented building, where men receive careful professional attention. The general police of the camp is not good. All sinks were in an abominable condition, old sinks were not filled up and new sinks were not sunk beneath the level of the ground, but left to drain down into the adjacent valley, much to the detriment of the neighboring population. There were no kitchen sinks. No records have been kept of this hospital. The surgeon was instructed in military hygiene and hospital administration. The ration was complained of, as being deficient in fresh beef, and of proper diet for the sick.

At Sagua is located a 100-bed Spanish hospital, in fair state of preservation. The present occupancy of it was advised against, until thorough disinfection had been put into effect.

Baracoa was next visited—a town of 4000 inhabitants, garrisoned by three companies of the Third U. S. V. Infantry under command of Lieut.-Col. T. S. Wylly, who possesses all the requisites toward the making of an admirable soldier. The sanitary work that Colonel Wylly has done at Baracoa deserves special mention. He has moved his command from a well-selected camp-site into the Spanish hospital, situated on a high hill. All floors have been removed and earth taken away to the extent of two feet and refilled with fresh gravel, and covered over with a half-inch layer of concrete. Water-closets and shower-baths have been established. The water-supply is taken from the Baracoa waterworks, from the Macaguanigua River, piped up into a reservoir and distributed throughout the post. The hospital was in an excellent condition, records carefully kept, rations and cooking excellent; medical officers intelligent and energetic. A complete chemic laboratory of expensive instruments and rare chemicals was found. It is recommended that they be turned in to the U. S. general hospital, Santiago de Cuba, for the purpose of establishing a chemic laboratory at that institution.

Guantanamo was inspected, November 1. The headquarters and six companies of the Third U. S. V. Infantry were found encamped a short distance from the town of Guantanamo, the latter a city of 10,000 to 12,000 inhabitants. The camp was well selected, on a sloping hillside, well ditched and drained. All

privy and kitchen sinks were carefully dug and well policed. The sick report showed 25 per cent. sick, principal affection being malarial fever. The yellow fever outbreak has ceased to exist, no cases being found by the inspector. The water-supply, taken from the Guantanamo River, pumped into a reservoir, an iron tank, is there piped into a large iron cauldron and boiled. General police at camp is excellent. The hospital is carefully constructed and was found to be in excellent condition. The records were carelessly and improperly kept.

The following general impressions have been gathered from these and former inspections:

1. The lack of a hospital corps detachment at most of the regiments.

2. The inefficiency and ignorance of hospital stewards as regards their duties as such.

3. The low grade of the average medical officer, both commissioned and contract, especially the latter.

4. The fact that commanding officers, as a rule, are very much alive to the necessity of rigid sanitary precautions in this climate.

Upon arrival I was ordered to return at once to Holguin and Gibara and to assume entire control of the sanitary administration of the district. The below mentioned able corps of acting assistant-surgeons were ordered to report to me for duty in connection with the work of eradicating the disease: Myer Herman of New Orleans; Guel Dolz of Havana; W. O. Stone of Mississippi; Felipe Veranes, chief surgeon Cuban Army; Vicente Gomez of New York. We now have the city of Gibara under control and are at work upon Holguin.

SOCIETY PROCEEDINGS.

Southern Surgical and Gynecological Association.

Eleventh Annual Meeting, Dec. 6-8, 1898.

Dr. RICHARD DOUGLAS of Nashville, Tenn., presided over the meeting, which was held at the Gayoso Hotel, Memphis, Tenn.

Prayer was offered by Bishop Gailor.

Dr. ALEXANDER ERSKINE of Memphis delivered an "Address of Welcome" on behalf of the local profession, which was responded to by President Douglas, after which routine business was disposed of.

D. WILLIAM E. PARKER of New Orleans, La., presented a paper entitled

GUNSHOT WOUNDS.

He described the hospital conditions in Cuba and the wounds seen by him made by the modern bullet. He spoke of some experiments made under the direction of Major L. A. La Garde, surgeon U. S. A., as to the relative penetrating powers of the Mauser, Krag-Jorgensen and Springfield rifles. With ammunition of the years 1896 and 1897 the Mauser, fired at a distance of three feet from the muzzle into seasoned yellow pine posts, would penetrate 34 + inches; with ammunition of 1895 it would penetrate 32 + inches; with ammunition of the past year, the Krag Jorgensen, fired at the same distance, would penetrate 24 + inches, and the Springfield would penetrate but 5 inches; yet many lodged Mausers were found, and he was told by the Spanish chief surgeon that but six lodged Krag-Jorgensens were found by them. In speaking of wounds of special regions, he said that flesh wounds, as a rule, healed under one dressing. In the few cases that did not, the sloughing was at the points of entrance and exit, and not along the whole track of the bullet. Explosive effects were not seen by any of the surgeons. He stated that he had hoped to present some statistics as to the wounds of the war, but they could not be had. Wounds of the brain did well. He had heard of at least five cases that were still alive and doing well. But one case of wound of the spinal cord was operated upon and he was doing well. This patient had paralysis of both legs and of the bladder and rectum. Some spiculæ of bone had been removed from the cord. At this time the patient has perfect use of the right leg and partial use of the left, and has perfect control of his bladder and rectum. He said that while he had not in any way modified his opinion that laparotomy should be done for abdominal wounds in civil life, with the small modern bullet and lack of proper facilities this operation should not be attempted in the field, unless there should be symptoms of hemorrhage. About 50 per cent. of these cases recovered without operation. Chest wounds did well and caused but little trouble. In cases of wounded vessels, hemorhage did not seem greater than in cases wounded by other bullets. When nerves were injured, nerve suture was not attempted on account of the rush of work, but he thought it should be attempted as soon as possible. None of the hospitals had a sufficiently large number of surgeons or hospital-corps men, but he spoke of the efficiency of those who were there.

Dr. F. W. MCRAE of Atlanta, Ga., followed with a paper on

PENETRATING WOUNDS OF THE ABDOMEN, WITH REPORTS OF CASES.

At the outset, the essayist referred to a resolution passed unanimously by the Association at the Nashville meeting in 1896, to the effect that in all cases of penetrating wounds of the abdomen it is the duty of the surgeon to make an exploratory incision so as to definitely determine whether the viscera have been injured or not. Since then a few able surgeons have dissented from this opinion. The propriety of surgical interference in cases of penetrating gunshot wounds of the abdomen will depend on one of three things: 1, the general condition of the patient; 2, dangerous internal hemorhage; 3, wounds of the stomach or intestines large enough to permit extravasation. He quoted from contributions to this subject by Senn, Nunez, Winslow, Budinger, Vaughan, Woolsey, Robson, Chauvel, Michaux, Klemm, and others, and said, from the conflict of opinion and advice given by these and various other surgeons, one is at a loss to know just how to proceed in many cases. His own convictions, based on sixteen cases, which he narrated, are positive. While he has the greatest admiration and respect for the surgical opinions of Senn, he should be recreant to his convictions were he to accept the proposition of non-interference laid down by Senn in his recent contributions to the subject. In most of the cases which have come under his observation where grave lesions of the abdominal viscera have existed, the symptoms of internal injury were practically *nil*, and the positive signs of grave damage almost entirely absent. In conclusion, he reiterated his firm conviction that every case of penetrating wound of the abdomen, where there is reasonable doubt as to injury of the abdominal viscera, should be subjected to at least an exploratory operation. This enables the surgeon to either absolutely be sure that no injury has been done to the viscera, or to repair, as far as possible, such injuries when they exist. The mortality following a simple exploratory operation per se is so small as not to weigh against the much greater mortality that necessarily follows the expectant plan of treatment. In the cases he had seen, the general and local signs have been so misleading and enigmatic that prior to the operation a conclusion on his part as to internal conditions would have been entirely guess-work.

Dr. HORACE H. GRANT of Louisville, Ky., contributed a paper on

PRACTICAL MANAGEMENT OF BULLET WOUNDS OF THE ABDOMINAL VISCERA.

Observation and experience with operators coming frequently in contact with this lesion have determined that penetrating wounds of the abdomen demand laparotomy at the earliest possible moment after diagnosis and thorough inspection of the entire region endangered. It is established that not only is the mortality in untreated wounds of the abdomen almost 100 per cent. where the intestines are perforated, and very high in wounds of the solid viscera, but it becomes less promising every advancing hour, until by the second day peritonitis sets in and destroys the hopefulness of the prospect. Within the past two years the speaker has operated upon four cases. In each case the patient was seen early, in no instance later than four hours. In three, resection of the intestine was necessary. Three of these patients recovered; the fourth died from septic peritonitis due to the escape of a large quantity of fecal matter before operation. Autopsy disclosed a perfect intestine.

These three papers were discussed together.

Dr. W. L. ROBINSON of Danville, Va., said he had seen a good many cases of gunshot wounds of the abdomen, and nearly all of them died, either with or without operation. Early operative interference might save some of them.

Dr. G. S. BROWN of Birmingham said he knew of several cases of gunshot wounds of the abdomen that occurred in and

around Birmingham, that recovered without operation. Personally, he had operated on five cases, one of which recovered. In this case there was no perforation of the intestine. Undoubtedly, diarrhea and starvation, mentioned by Dr. Parker in his paper, have something to do with the favorable results. The intestines are most liable to be perforated when full.

Dr. WILLIS F. WESTMORELAND of Atlanta said the results of gunshot wounds of the abdomen on the battle-field should not be compared with those met with in civil life. It is not a question of operating, so far as fatal results are concerned, but the manner in which the operation is done.

Dr. W. E. B. DAVIS of Birmingham thought that Dr. Parker's paper was not an argument against operative procedures for abdominal wounds. Surgeons on the battle-field do not have the same facilities for operating on penetrating wounds of the abdomen that they do in civil practice, and which are necessary for the proper care of cases. If a man sustains an injury to the intestine, if his abdomen is not opened, death may be expected. In twenty or more cases operated on by him and his brother, all of the cases died that were seen twenty-four hours after the injury. This is not an argument against operative interference, but against late operation. Statistics impress surgeons with the importance of early operation.

Dr. GEORGE A. BAXTER of Chattanooga believes it is not necessary in many instances to open the abdomen in cases of gunshot wounds, and cited a number of cases that recovered without operative interference.

Dr. JOHN T. WILSON of Sherman, Texas, advocated early operation in cases where the surgeon is convinced that perforation has taken place. The character, technique and rapidity of the operation are very important. In operating, the intestines should be exposed as little as possible.

Dr. W. L. RODMAN of Louisville said that while he has pursued the practice of operating on penetrating gunshot wounds of the abdomen for the last ten years, after hearing the paper of Dr. Parker and reading the recent contributions of Senn and others, he wondered whether he as well as other surgeons may not have gone too far in operating in so many of these cases; at the same time, he does not wish to be understood as advising a masterly inactivity where the environments for operative interference are favorable.

Dr. WESTMORELAND said that, given a case of perforation of the intestine, particularly where there is extravasation of contents, instead of being masterly inactivity, it is criminal inactivity for a surgeon not to operate.

Dr. PARKER, in closing the discussion on his part, said that he had tried to make a clear distinction between the plan of treatment of gunshot wounds of the abdomen met with on the battle-field and those encountered in civil life. He is strongly opposed to laparotomy on the battle field on account of the conditions that exist. In civil life, however, the thing to do in cases of gunshot wounds of the abdomen, is to get in and out of the belly as soon as possible consistent with good work.

Dr. MCRAE believes that a large proportion of operations undertaken for gunshot wounds of the abdomen late will terminate fatally.

Dr. GRANT stated that practically all cases operated on after twenty-four hours perish. It is impossible to diagnosticate perforation of the intestines with any degree of certainty. If a patient is seen within eight or ten hours after the receipt of a gunshot wound of the abdomen under favorable surroundings, whether the bullet has penetrated the intestine or not, the skillful surgeon will not hesitate to make at least an exploratory operation, because it would not hurt the patient, but would probably save his life.

Dr. W. D. HAGGARD, Jr., of Nashville, Tenn., read a paper entitled

A PLEA FOR THE MORE CORRECT APPLICATION OF THE EMMET METHODS IN PLASTIC SURGERY.

The pioneer work of Sims was feelingly referred to. It was a unique circumstance in the annals of surgery that the instruments which made the feat of Emmet possible, and the fundamental principles of his success have remained unchanged. It is not so much the truth of homage to unprecedented genius, as the truth of the great principles enunciated, and the perfection of his devices. The extension of the method of Sims in fistula to the injuries of the adjacent soft parts was made by Emmet. The evolution and perfection of the operation on the cervix was traced. Dr. Haggard described the mechanics of the production of rectocele associated with the common transverse tear of the posterior vaginal wall involving the pelvic fascia, which is the essential pathology of this injury. The rational correction of this complex condition then would not be not to sew the labia together, which is the popular procedure in one class of operations, nor to denude an arbitrary area of fanciful shape on the rectocele and bring the edges of the raw patch together, after the fashion of another class. It would rather be, in the language of Emmet, "catch up the retracted pelvic fascia at such a point and in such a manner as to take in the slack, as it were, of the fascia throughout the pelvis, By this procedure the displaced posterior vaginal wall is certainly lifted up and drawn forward in contact with the vesico-vaginal septum. As the steps of the operation advance the displaced anus is lifted upward and forward, the everted tissues at the vaginal outlet gradually rolled in and the separated levator ani muscles brought together. He accentuated the essential features in detail. The classic operation for the complex tear of the perineum is more amenable to pictorial description and he believes it is more generally understood. He minutely depicted it. In every branch of art there is a troop of imitators who follow so closely the hall marks of the original that the specimens can scarcely be distinguished from the genuine. So closely are mannerisms copied in literature, art, sculpture and the drama, that the imitators create a distinctive school. This accuracy of duplication is rendered possible by the faithful and scrutinizing study of the original pattern. The unlimited opportunities for the study of models in the arts are obviously impracticable in plastic surgery. We can not all have the privilege of seeing the peerless Emmet, although a distinguished fellow of this Association says that everyone who aspires to do this work ought to. Dr. Haggard regrets that many of Dr. Emmet's pupils do not or can not copy his methods, and he does not hesitate to say that those who do conscientiously strive to imitate him, fall very short in their efforts, but they have at least the satisfaction of having a correct conception of the highest ideals in surgery.

Dr. HOWARD A. KELLY of Baltimore, Md., presented a paper entitled

THE TREATMENT OF COMPLETE RUPTURE OF THE PERINEUM BY DISSECTING OUT THE SPHINCTER MUSCLE AND ITS DIRECT UNION BY BURIED SUTURES.

He said that the results of the best methods of the treatment of complete tears of the perineum are not entirely satisfactory in a large percentage of cases. The control over liquid motions and flatus is as a rule not secured immediately, and it is usually necessary to encourage the patient by telling her that she "will have to learn to control the muscle in the course of time." Such a control, more or less perfect, is gained in the course of several months. This defect in our present procedures is due to a faulty approximation of the sphincter ends which lie buried in a pit, and are therefore difficult to bring into accurate, firm apposition by sutures embracing a considerable quantity of tissue surrounding the sphincter ends. Dr. Kelly proposes, therefore, the deliberate dissection and freeing of the sphincter ends, drawing them out about one and a half centimeters from the tissues, cutting off the scarred ends, and affecting a direct union of the freshened ends by two or three catgut sutures. He was led to do this operation by his experience in a case which had been operated upon six times with a result, which, judged by superficial appearances, was perfect, and yet the patient had no control over her bowel functions. He made a semi lunar incision around the anterior periphery of the anus and found the right sphincter end buried in scar tissue in the median line, while that of the left side was ectopic and attached out under the ischial tuberosity. The sphincter ends were united directly by buried catgut sutures, and the skin wound closed and union took place *per primam*. In addition to these buried catgut sutures a splinting suture of silkworm gut is passed through the middle of the sphincter near the edges of the wound and on up through the septum splinting the ends together and taking the tension off the catgut. He has since taken the hint given by this case and adopted a similar procedure in six cases of complete tear of the perineum due to confinement. Two additional cases were operated upon by Dr. W. W. Russell and one by Dr. Ramsay. In each instance there was a surprising difference between the new and older methods, noted at once in the earliest stages of the convalescence, and the patient was immediately conscious of perfect control of her functions. The bowels should never be locked up. Great care must be taken not to leave any dead spaces in closing the remainder of the wound in the usual way, in order to avoid all risk of infecting the buried sutures. He only recommends this operation to those who possess considerable skill in doing plastic operations and in securing a snug, accurate adaptation of the parts.

In the discussion Drs. George H. Noble of Atlanta and J. Wesley Bovee of Washington, D. C., added their testimony to the usefulness of the method described by Dr. Kelly, but certain features of the technique of which they modified.

Dr. LEWIS S. MCMURTRY of Louisville, Ky., read a paper on

THE TREATMENT OF CANCER OF THE UTERUS.

He said that the treatment of uterine cancer had not shared proportionately in the great advance of modern pelvic surgery. While other diseases which were long the opprobria of medical and surgical science and art had been made amenable to surgical treatment, the treatment of cancer of the uterus was practically where it was twenty years ago. Cancer of the uterus was a very common disease. Women were more subject to cancer than men and in quite one-third of all cases of cancer in women, the uterus was the seat of the disease. The disease occurred as a rule between the ages of 30 and 50, attaining its maximum prevalence at the menopause. It was rare in unmarried and sterile women, and was most common with the mothers of large families. Race and environment have much to do with its development. It had been the experience of the essayist that the disease is proportionately rare in the negro race. From a careful statistic study, Billings declares that cancer is slowly but steadily on the increase, and that its greatest prevalence is in nations which have attained the highest state of civilization. In 1893 London alone lost 3412 of her population from this disease, a percentage of 3.73 of the total death-rate for the year. Cancer of the corpus uteri is rare in comparison with the common exhibition of the disease in the cervix, but not so uncommon as was formerly understood. Cancer of the cervix originates: 1, in the squamous epithelium of the vaginal portion of the cervix; 2, in the cylindric epithelium of the cervical mucosa, and 3, in the epithelial lining of the cervical glands. Cancer of the body of the uterus originates in the epithelial structures of the endometrium. The treatment of uterine cancer consists in a variety of operative procedures, leading up to the most recent operation of combined abdominal and vaginal extirpation. The names of Verneuil, Carl Braun, Schroeder, Pawlik, Koeberle and Byrne are associated with high amputation of the cervix with ecraseur, cautery and knife. High amputation, as practiced by Schroeder, attained the greatest favor and maintained its position over hysterectomy until 1886. Prior to this time, hysterectomy had such a high mortality (15 per cent.) that high amputation deserved preference. In 1886 the operation of total vaginal extirpation was revived by Martin, Leopold and Olshausen. Since that time this operation has been very generally adopted, and is today the accepted treatment for the radical cure of cancer limited to the uterus itself. With the modern perfected technique the mortality of this operation is reduced to about 4 per cent.

The Doctor referred to the statistics of vaginal hysterectomy as given by Pozzi in the third edition of his treatise on gynecology, an analysis of which does not strengthen or inspire confidence in the ultimate results of this procedure. He said that claims are being made for the permanent cure of uterine cancer by hysterectomy which could not be realized. Of all the cases of uterine cancer which apply for treatment, only a small proportion are within the scope of a clean extirpation by vaginal hysterectomy. The large number of cases in which the disease recurs at the site of operation within a few weeks demonstrates that the operation is in most cases simply a resection, leaving behind sufficient disease for continued activity. His personal experience with this operation has been discouraging. Vaginal hysterectomy for cancer has never been a favored operation with him. During the past year he has done the operation in five cases, which were selected as most favorable for permanent cure. In all the disease was discovered early, and, so far as macroscopic evidence could show, it was limited to the uterus itself. The organ was normally mobile. Of these five cases treated by vaginal hysterectomy, two had recurrence, one in the bladder, the other in the vaginal fornix at the cicatrix, within five months after operation. These were selected cases in which the disease was early recognized; the patients were under 50 years of age and well nourished. The operation was done with a view of going far beyond the region of probable infiltration, and removing the appendages with the uterus. Based on his own previous experience, and that of other operators, it is doubtful if one of the three remaining cases will be living at the end of three years from the time of operation.

The histologic structure of the uterus and adjacent structures is exceptionally favorable for disseminating this disease. The rich lymphatic distribution here is an active means of infection, but the studies of Cullen show that the activity of lymphatic invasion has been exaggerated, and that the common mode of infection is along continuous structures. Extension is most rapid around the vaginal vault, forward and downward under the bladder, aad in the base of the broad ligaments. The common invasion of the vagina by implantation about the cancerous cervix has suggested to Werder the method he has practiced of total excision of the uterus and vagina by suprapubic operation.

In conclusion, Dr. McMurtry considered in detail the choice of operation for the several classes of cases of carcinoma of the uterus which are presented to the surgeon for treatment. For advanced cases, where the entire field of evident invasion cannot be removed, he advocated thorough curettage, scraping away necrosed tissue, emptying obstructed pus accumulations, washing out debris and establishing drainage and antisepsis. Such local treatment will reduce septic intoxication, prolong life, and promote comfort. All operations for radical cure should be limited to cases in which the disease is recognized sufficiently early for thorough removal of invaded structures. This will be best accomplished in the majority of cases by abdominal section and removal of uterus from above, including liberal portions of adjacent structures, especially the upper portion of the vagina, where implantation from the cervix is so often found. While liberal excision of suspicious areas of tissue should be done, it will rarely be found necessary to remove the subperitoneal lymphatic glands, since their enlargement has been often found inflammatory in character instead of cancerous. The field of vaginal hysterectomy should be limited to the few cases of early diagnosis in which operation can be done before deep extension of the disease. Efforts for prophylaxis should be most diligent and should be of universal application. All ulcerative and cicatricial lacerations of the cervix should be repaired as a prophylactic measure.

Dr. WILLIAM L. RODMAN of Louisville asked the members to give their experience relative to the frequency of cancer in the black and white races. He was rather surprised to hear of the infrequency of the disease in the negro woman. According to the last census statistics of Billings, cancer of the uterus is more common at all ages in the black than in the white race. This is also the experience of Matas, who has examined the records at the Charity Hospital in New Orleans. An examination of all deaths recorded by the Health Department of Louisville for the past thirty years corroborated the same view.

Dr. ERNEST S. LEWIS of New Orleans stated that while he had not observed a very marked difference in the relative immunity of negro women to cancer of the uterus, still if his experience is not at fault, he thinks, owing to their uncleanliness, their mode of living, and to the more frequent accidents to which they are subject during labor, they are particularly prone to cancer of the uterus. With regard to the results of all operations for cancer of the uterus, he endorsed everything Dr. McMurtry had said. He could only recall one case of vaginal hysterectomy for cancer that lived for eight years, after which the disease returned, and the patient finally died. The disease is so liable to return that he considers any operation as palliative, and he believes that would be the result of the abdominal operation advocated by Dr. McMurtry, particularly in advanced cases, and if cases are met with in the incipiency of the disease, in his opinion as much could be accomplished by the vaginal as by the abdominal operation.

Dr. VIRGIL HARDON of Atlanta said during his seven years' connection with the Grady Hospital, he had reason to believe that cancer of the uterus was more frequent in negro women than in white women. He has been led by his experience in the treatment of uterine cancer to the same conclusion as that reached by the essayist, except he had been led to go further. He has operated for cancer of the womb by vaginal extirpation, by the abdominal method, and by the combined method, and he has never yet operated upon a case where recurrence did not take place sooner or later, and for this reason he has lost all confidence in operative measures as a means of effecting a permanent cure. However, he has no doubt on theoretical grounds, that if cases are seen sufficiently early, a permanent cure might be effected by surgical interference.

Dr. HOWARD A. KELLY of Baltimore remarked that he was astounded at the trend the discussion had taken, because he had seen dozens of cases of cancer of the uterus that had remained well for a number of years after having undergone surgical intervention, removing the uterus either by vagina or by the abdomen. He finds carcinoma of the uterus as frequently in negroes as in white women.

Dr. J. WESLEY BOVÉE of Washington, D. C., said that his experience in the radical treatment of cancer of the uterus has been more satisfactory than what he had been hearing today. He knows of a good many cases upon which he has operated that have gone on for three years or more without a recurrence of the disease. He has done three operations after the manner described by Werder in the *American Journal of Obstetrics*, last winter, and he is much pleased. In each case he adopted the abdominal rather than the vaginal route, believing a more

radical operation could be performed by this method. He has great hopes for the future treatment of cancer of the uterus by complete abdominal hysterectomy, undertaken early.

Dr. WILLIAM L. ROBINSON of Danville said that when the parts have become infected beyond the uterus, no dissection, however extensive, would ever remove the cause. When the disease has extended beyond the uterus, he believes it is beyond the power of any surgeon to thoroughly remove it. Therefore, unless an operation could be done very early, he would not advise the removal of the uterus.

Dr. W. E. B. DAVIS was profoundly impressed with the position taken by Dr. Lewis as to the ultimate outcome of cases of cancer of the uterus, believing his position is correct. There is no man in America who has had a larger experience in the treatment of cancer of the uterus than Dr. Lewis of New Orleans, and the profession were familiar with his great skill as a surgeon, hence his experience regarding uterine cancer was certainly valuable.

Dr. MCMURTRY, in closing the discussion, said he could not endorse the view that Dr. Kelly takes with reference to the ultimate results of the operative treatment of cancer of the uterus. He knows that Kelly's work in this direction has been extensive, and that his reports are sincere and reliable, but there are a great many surgeons, working in the same line, who have done thorough, faithful, skilful work in the radical treatment of uterine cancer, who doubt the future confirmation of Dr. Kelly's views.

Dr. JOHN T. WILSON of Sherman, Texas, read a paper on

FRACTURES INVOLVING THE ELBOW-JOINT.

He said: Fractures involving the elbow-joint are of great interest and always cause more or less anxiety because of their liability to ankylosis, partial or complete: to deformity, or to some interference with the perfect function of the joint as a result. Fractures without the capsular ligament are not so grave, are under better control, give more satisfactory results, and cause less apprehension. Fractures within the ligaments are always troublesome, give rise to more inflammation, demand greater care in their reduction, in the dressing, and in the after-treatment. Ankylosis in various degrees is generally looked for when union has taken place; it is extremely difficult in many cases to avoid this result, but with care, patience and perseverance on the part of the surgeon and patient, this complication can be remedied wholly or in part in nearly all cases. It is necessary to remember that the muscular attachments to the region around the joint are very great. It is difficult to conceive of a fracture here where the fragments do not involve a muscular attachment, and are more or less displaced by it. A knowledge of these attachments is sufficient to indicate the difficulty of confining the broken bones in perfect apposition. In fractures of this joint there is usually considerable inflammation ensuing, the cartilage of the articular surfaces being wounded and the investing ligaments lacerated. The amount of callus thrown out is considerable, it hinders motion, and is generally slow of absorption.

To get the best practical results in these fractures it is of supreme importance to keep the parts at absolute rest. To do this, the joint must be put up in a suitable fixation dressing and patient kept in a quiescent state; in order to do this it is necessary to confine patient to bed for a week or more, and a fixation dressing is applied in the beginning of the treatment. Eminent surgeons differ in regard to the position of the forearm. The different fractures and the different degrees of fracture require different positions of the forearm, require different positions in pronation, supination and the angles. Either extreme strikes him as being irrational. He is guided by that position which favors best the coaptation of the fragments and the relaxation of the muscles, giving the least deformity, and the flexed position in some degree has been the one usually employed. After an aseptic scrubbing of the joint, arm and forearm, under an anesthetic the diagnosis is made, if possible, and the dressings applied. After a nice application of the spiral reversed roller, not too tight, a firm pad of sterilized gauze is placed in front of the joint opposite the broken fragments, thick enough for a firm support, and not as thick as to interfere with the functions of the splint. The anterior splint is then put in place, one with a ratched hinge much like that of Dr. Agnew, which can be placed at any angle desired and extending from near the wrist to above the insertion of the deltoid. A pasteboard trough is then moulded to the posterior surface of the limb extending from the axilla to the ends of the fingers and confined by a roller. If no contraindication this dressing is not disturbed for three or four days, or longer, if deemed advisable; it is then carefully removed, the joint examined and if the inflammation has subsided the permanent dressing is applied.

The correct position is maintained by the anterior splint and a carefully moulded plaster of paris trough is fitted posteriorly; this must be adjusted nicely in order to support the fragments, keeping them in place posteriorly and laterally. This should also extend from the axilla and support the hand, should not be heavy and cumbersome, but firm enough to thoroughly fix the joint and arm. This can be done by having some strips of heavy gauze or cheese cloth measured by the sound arm and carefully cut to the proper size; the plaster is thoroughly rubbed in these and they are then applied, the arm being well protected, layer by layer, a solution of plaster rubbed in between each layer until of the thickness desired. This dressing can be controlled at will, and if nicely applied is not so cumbersome as it would seem. If it becomes desirable to change the position or angle, the plaster trough can be taken off by simply removing the roller, the position changed and a new trough applied. He prefers to have the anterior splint of wood broad enough to cover the joint, and yet not extending quite to the ends of the epicondyles, the joint fitting closely down to the bend of the elbow, the ratched notches changing not more than the eighth of an inch at each movement. If properly made, this splint is light enough and yet firm enough for all practical purposes, and much of its usefulness depends upon its fitting well, and so with the plaster trough. If extension and counter-extension are necessary, these can be had by extending the plaster trough under the axilla and the anterior splint will make sufficient counter-pressure by means of the roller. This gives a firm, fixed dressing, keeping the parts in place and at rest, so necessary in all inflammatory conditions of the joints. The patient is seen frequently, the joint examined at any time when there seems to be an indication for it; this should never be done, however, if there is no special indication for it after the permanent dressing has been applied and the surgeon satisfied that the fragments are in place. If kept in this position and joint at complete rest, danger of ankylosis is not great.

After three or four weeks, not earlier unless there is special indication for it, dressings can be renewed, the joint examined with care and, if any stiffness, passive motion gently instituted under an anesthetic, if necessary. If only fibrous bands exist, they can be broken up. Violence should not be used. Gentle motion, frequently repeated and persevered in, will often accomplish more than sudden forcible separation with shock attending it. Rubbing and systematic massage at this stage is of great value, and if stiffness is not readily overcome, persistence in the gentle efforts continued; after five or six weeks patient is instructed to gently exercise the joint twice daily with Indian clubs and dumb-bells, neither of which should be too heavy. He is advised to use the hand and arm constantly, and in time, in the great majority of cases, will be rewarded with success. In some cases improvement may take many months or two or three years before the function is restored. If there are several fragments of bone and some so small they can not be kept in apposition, their removal would save time and trouble and give a more favorable chance for a better joint. If ankylosis has supervened upon a fracture and many months of patient effort at restoring the function of the joint proved futile, an operation is justified. If a fragment is causing the trouble, it can be removed. A resection will often give a good useful joint.

Dr. J. WESLEY BOVÉE of Washington, D. C., read a paper entitled

THE USE AND ABUSE OF NORMAL SALT SOLUTION.

The term "normal salt solution" has been used interchangeably with artificial serum. Various compositions and strengths of the constituent elements of the blood have been used with the name—normal salt solution. According to Kirke's "Hand-Book of Physiology," salt exists in the blood plasma in the proportion of 5.546 parts per 1000 and .6 per cent. is a good practical formula. Other ingredients, i. e., egg albumin, have been added to the salt which really make an artificial serum instead of normal salt solution. Of the five different routes through which it is introduced, the intra-arterial, suggested by Dawbarn, is considered unsafe in all conditions and should not be practiced. The subcutaneous is the most useful for general use. In emergency work the intravenous method will often be needed in severe hemorrhage and the rectal enema of solution will be found of great advantage in nearly all cases where no bowel lesion is to be combated. In abdominal surgery the peritoneal cavity will be the place selected for its introduction, and even in vaginal opening of the peritoneal cavity as in hysterectomy from this way the author has thrown considerable quantities into the peritoneal cavity, the hips being elevated at the time and the peritoneal opening closed directly afterward. The intravenous route, usually the most

rapid, may be rendered slower than the subcutaneous by difficulty of finding a vein and successfully introducing the canula. The physiologic action of normal salt solution is as a powerful stimulant to the cardiac ganglia and the nerve-centers. The skin, kidney and intestinal functions are stimulated markedly and other organs are likewise affected. Osmosis is markedly promoted by it and as a result of increased arterial tension the blood supply to the heart muscle is much increased. It has a hemostatic effect when supplied locally to raw surfaces, lessening oozing by stimulating and contracting the smaller vessels. According to Hayem and others, it augments the number of red-blood corpuscles. It is eliminated by the skin, changing the chemic reaction of the perspiration and heavily loading it with salt. The kidneys also carry away an enormous amount of it when large quantities of it have been introduced into the tissues. The lungs remove it freely, it having been noticed in crystals on the lips after its free use. Autopsies after its use under the skin have shown a considerable quantity of it in the intestines, demonstrating it is thrown off by this route.

The essayist then spoke of its use in general medicine. In surgery the principal indications for its use are shock, hemorrhage and sepsis. In shock it should be employed early, on the table during operations, or even before the operation has been undertaken in bad cases, or after operation in milder ones. Severe hemorrhage is to be treated in the same manner, though only after the flow of blood has been checked. If the hemorrhage be severe, the intravenous route may be employed, it being about the only indication for this method. In the author's abdominal work he almost invariably leaves a considerable quantity of salt solution in the peritoneal cavity. Its salutary effect is produced by its action on the abdominal viscera with which it comes in close contact. To prevent adhesions in the pelvis, one or two liters suffice. It hastens absorption of stray or concealed blood-clots, septic foci, or escaped fluids, by carrying them well up into the abdominal cavity in cases of pelvic surgery. In hemorrhage it is probably best to infuse small quantities and often rather than one large quantity. Judging from the reports of experimenters, the use of salt solution is not a harmless procedure. It is contra indicated in such conditions of the blood as hemophilia, dyscrasias, deficient fibrin, etc. It would seem not unreasonable that such a strong stimulant coupled with its dilation of the blood vessels, when used in large quantities, and especially when thrown directly into them, would be very harmful in such conditions of the circulatory apparatus, as myocarditis, pericardial effusion, atheroma, arteriosclerosis, cardiac degeneration, bad valvular lesions, thrombosis, and recent cerebral apoplexies. Chronic diseases of the lungs, kidneys or liver, especially if malignant, are apt to be aggravated by it. Active hemorrhage in any location is aggravated by it. The presence of toxins in the blood has been found to retard the elimination of normal salt solution, and for that reason small quantities at a time only should be employed.

It is necessary to avoid certain accidents and mistakes in using normal salt solution. We must know the solution is sterile when it enters the tissues of the body, except by the rectum, in which case it is of no moment. Avoid air-bubbles entering into blood-vessels or cellular tissue. The fluid must be of sufficiently high temperature when it reaches the body. Chills occur from a cold solution and are dangerous to very weak patients. The vessel containing the solution as well as the tube and needle conducting it must be aseptic and thoroughly pervious; the tube should have a glass window that the rapidity of the current and the presence of any foreign body may be noticed. When the solution is to be introduced through the skin, either into cellular tissue or vein, the local surface should be cleaned as much as the limited time will permit. Probably not more than a half liter should be injected into the tissue through one puncture, as localized necrosis and aseptic inflammation have resulted from over distention of the tissue spaces. Ordinarily not more than one ounce per minute should be injected into tissue or vein. Pulmonary edema, dyspnea, headache, vertigo, mental excitement, delirium, hallucinations and severe pain in the left side occur from overdistention of veins from too large infusion.

In the discussion, Drs. Parker, Johnson, Noble, Farham, Cartledge, Tiffany, Kelly, McMurtry, Baxter, McRae, and Brown, spoke favorably of the use of normal salt solution.

Dr. JOSEPH TABOR of Washington, D. C., presented a paper on

THE CONSERVATIVE TREATMENT OF THE DISEASED OVARY.

The difference between the radical and conservative treatment of the diseased ovary is somewhat difficult to define, inasmuch as the most radical treatment under some circumstances is really the most conservative, while in other cases, to conserve the best interests of some particular diseased ovary requires the most radical surgery.

In the early part of the present decade, quite a conservative wavelet swept over the country, and considerable harm was done to pelvic and abdominal surgery in the mild and gentle name of conservatism. Incomplete conservative operations were done, some of which had to be completed later on by radical operations. Some of the men who claimed to be the most conservative, and attracted the timid doctors and frightened patients, were actually removing more ovaries and tubes than many of their so-called radical friends. Much credit has been claimed for saving a part or the whole of one ovary and tube, when only a simple catarrhal salpingitis existed, by an operator posing before the profession and community as a conservative, when the surgeon designated a dangerous radical, to be avoided, would actually not have operated at all, and would probably have cured his patients by other means. In some instances genuine, successful conservatism was practiced with lasting beneficial results, but not always from the highest and purest motives. Again, it has been charged that actual radicalism has successfully masqueraded under the name and guise of conservatism to the injury of the trusting patient, and the discredit of good surgery. So much has been learned by accumulating experience, as the domain of the gynecologist has undergone so much expansion, that real conservatism is gradually gaining ground over real radicalism to such an extent that he who presents ovaries and tubes or a fibroid uterus to a modern up to date medical society, has to state very good reasons why he sacrificed these important organs in their entirety to escape criticism and possibly censure. Sacrificial surgery is gradually giving way to more conservative and humane methods. He believes there is a maxim in general surgery in favor of saving every inch of the human body possible, and another that it requires a higher order of skill to save a mutilated or diseased member than it does to cut it off or to cut it out. With his present experience in abdominal surgery, he is free to confess that he can now save ovaries and tubes which he formerly thought it necessary to totally remove. The increasing skill of our abdominal surgeons and their accumulating experience in actual conservative work, go to show that we are approaching nearer to that true conservatism which is the offspring of increased skill and experience. In abdominal surgery it requires a higher order of skill and a greater experience to save an organ or part of an organ than it does to remove it. It is important to save a portion of one ovary, when the other has been removed on account of a tumor, an abscess, or for any other cause. The disagreeable symptoms accompanying the artificial and premature change of life are often stormy and protracted; in some rare instances threatening, if not resulting in actual insanity. These women are happily prevented from falling into such a condition by saving one or a portion of one ovary; menstruation is then not interrupted, and the sexual and other feelings of the patient undergo none of those sudden and peculiar revulsions which unfortunately sometimes follow the total removal of both ovaries and tubes. In conclusion, Dr. Johnson said that if growing experiences in the abdominal cavity and accumulation of evidence continue in favor of more conservative and less sacrificial operative work, he feels sure that the deep debt of gratitude now felt toward abdominal surgeons by suffering women will be tenfold increased and intensified.

Dr. RICHARD DOUGLAS of Nashville, Tenn., delivered the presidential address. He made a departure from the usual or stereotyped address and selected for his subject

ACUTE GENERAL PERITONITIS.

Before considering his subject proper, he spoke of the growth of the association and the excellence of its scientific work, saying that the association owes its existence and high standing to the indefatigable efforts of Dr. W. E. B. Davis, the permanent secretary.

A bacteriologic classification of peritonitis is beset with many difficulties, and while the speaker is free to admit that for all practical purposes peritonitis is of bacterial origin, yet there occurs a respectable percentage of cases in which the most rigid examination fails to disclose the presence of micro organisms. Hartmann and Moreau recently reported such a case in detail. Of 110 cases bacteriologically classified by Flexner, there were twelve cases which he was obliged to consign to the idiopathic group. It is true that in all of these patients there existed conditions predisposing to peritonitis, such as cardiac, renal or hepatic disease. In the intensely septic mycotic form of peritonitis their absence may be accounted for by the fulminant type of the disease, death occurring from intoxication before the colonies of bacteria are well established.

Any effort to individualize the effect of a specific bacterium,

to connect its presence with a definite pathologic phenomenon and characteristic symptomatology is as yet futile. Mikulicz avers that all forms of peritonitis run the same clinical course regardless of the bacteria that cause it. There is a law laid down by Maloz to the effect that if the peritonitis is of intestinal origin, the colon bacillus will show it; if it is of uterine origin, that is, connected with abortions or labor, we will find the streptococcus. It is asserted that the colon bacillus constitutes nine-tenths of the bacteria of the digestive tract, the colon is its natural habitat, but its behavior upon gaining entrance to the peritoneal cavity depends upon many circumstances, and this bacillus has many morphologic conditions, many forms and stages. The constancy of its presence in peritonitis, since the demonstrations of Welch and others of its capacity of transmigration through the bowel, has led many to attach to it great significance as an etiologic factor, but its association with other forms of micro organisms renders the first proposition of Maloz null and void. If we interpret Maloz' law correctly, the absence of streptococci would eliminate the possibility of peritonitis being of puerperal origin. In rebuttal of this idea, Dr. Douglas quoted from Winckel, who says, "Kroenig examined all parts of the uterus of a woman dead from infection and found not only the superficial thrombi at the placental site thickly filled with bacteria, but also the serous lining of the peritoneum." This case shows that a woman may have a peritonitis following abortion without streptococci, and it further shows that the colon bacillus without an intestinal lesion may produce a fatal peritonitis. No doubt too much importance has been ascribed to the colon bacillus, and it is interesting to note that Tavel, who was among the first to emphasize the pathogenic powers of the bacillus coli communis, thinks now the bacillus coli should be considered merely a collective name of many varieties of bacteria.

No better argument against bacteriologic classification can be adduced than the words of Simon Flexner, who says: "In order that pathogenic bacteria introduced directly into the peritoneal cavity may cause a peritonitis, general or circumscribed, evanescent or fatal, the normal conditions of the peritoneum must in some way be modified." It is clear, then, that in the human being, as in experimental animals, some other condition than the mere presence of pathogenic micro organisms in the abdominal cavity is necessary in order that peritonitis may be produced. Bacteria alone and unaided by physical conditions are comparatively innocuous.

Restricting consideration entirely to acute general peritonitis, it occurs from traumatic or consecutive causes. Under the head of traumatic peritonitis is embraced all infective inflammations arising from wounds of the peritoneum, whether accidental or operative, penetrating or non penetrating. Consecutive, secondary or symptomatic peritonitis may be subdivided into peritonitis by continuity, and perforation peritonitis.

Under the head of traumatic peritonitis all forms of peritonitis must be embraced that are due primarily to a trauma. The destruction of tissue, the retention of blood clots and natural secretions, prepares a suitable soil for microbic invasion, and this essential infecting element may be introduced from without, as through penetrating gunshot, stab or operative wounds, under which circumstances it is usually a poly infection, the streptococcus predominating. There are also contusions of the abdomen without an external wound which so injure and lower the resistance of the tissue as to favor the migration of the intestinal micro organisms and their infection of the general cavity.

The supervention of acute general peritonitis, as secondary to pre existing disease processes, embraces in its etiology infective inflammations not only of all intraperitoneal viscera, but all organs or tissues contiguous thereto, and it does not appear to him to be too broad, if there be included within its scope those peritonitides of hematogen or metastatic origin, for it is well established that the specific germs of diphtheria, scarlet fever, pneumonia and erysipelas have produced acute general peritonitis.

Peritonitis by continuity is the uninterrupted extension of the inflammation from an infected area to the peritoneum and is accomplished by the invading army of micro-organisms through the lymphatics, blood-channels, or by direct penetration of tissues. The reactionary inflammation which determines the localization or diffusion depends upon the virulence of the bacteria, the resistance of the tissues, and, what is too frequently overlooked, the individual resistance of the patient. Puerperal peritonitis of streptococcus origin conspicuously illustrates inflammation by continuity.

Perforation peritonitis is the next subdivision of secondary peritonitis. The sudden opening of a focus of suppuration and the discharge of its contents into the peritoneal cavity, whether it be from hepatic abscess, a pus-tube or mesenteric gland, is a true illustration of perforation peritonitis, yet the inflammation and systemic infection following is not necessarily so conspicuous. The duration of the primary disease, the virulence of the micro-organisms, the preparedness of the peritoneum by fortifications of adhesions, the general condition of the patient are all circumstances which may modify and circumscribe the peritonitis. It is more common for perforation peritonitis to occur as a result of ulceration of the wall of some of the hollow viscera as in peptic ulcer, typhoid and dysenteric intestinal ulceration, duodenal and appendicular ulceration.

The conclusions that may be drawn from an etiologic study of peritonitis may be thus summarized: Traumatic peritonitis, especially the post operative variety, is essentially a grave condition, not only because there is immediate or primary inoculation of the peritoneum, but the conditions are all favorable for germ culture and dissemination. Peritonitis by continuity may become general and prove rapidly fatal, but this is not the rule except in puerperal cases. Contrary to the expressed opinion of more than one writer, there is nothing peculiar about the peritoneum, or the cecum, or appendix, or the true pelvis, which accounts for the more frequent localization of inflammation in these regions than in other areas of the abdomen. The method of invasion, the activity of the process and resistance of patient alone determine the local or general type of peritonitis. Visceral perforation, whether traumatic or pathologic, is an ideal condition for germ culture and the elaboration of toxins. Their rapid absorption and general diffusion throughout the peritoneum sufficiently explain the grave state into which the patient is precipitated. It may be asserted that the clinical course and pathologic expression depend largely upon the nature of the exciting cause, the character of the pre existing disease or injury, and the mode of invasion.

Without attempting to formulate any definite pathologic classification of general peritonitis, and to adapt each to its special cause, he prefers to direct his efforts to simplifying and dispelling the confusion that exists. He accepts, with slight reservation, the now almost universally conceded idea that acute general peritonitis is and must be septic, that is, of bacterial origin. But he maintains that surgeons do not understand each other, nor have they all a clear conception of what is meant by septic peritonitis. It has been a race for life between the practical surgeon and bacteriologist as to who should claim the honor of naming the pathologic phenomena in this great serous bursa. He maintains that the surgeon is alone competent to define, classify and prognosticate the protean types of this disease. That men are honest, painstaking and accurate, goes without saying, yet how can surgeons reconcile the report of McCosh's last series of eight cases of general septic peritonitis and six operative recoveries with the experience of Senn "of many cases of diffuse septic peritonitis without a single successful result"? The answer certainly is not in the superior skill or special technique of the operator, but it is to be found in an analytic study of McCosh's cases, six of them were purulent peritonitis and two serous peritonitis, not the class of cases referred to by Senn at all. Tietze defines diffuse septic peritonitis to be "that form of peritonitis in which there is little or no exudate, severe symptoms of intoxication and terminating rapidly fatally." Some four years ago, Dr. Douglas reported eight cases of general peritonitis subjected to operation with four recoveries and four deaths. He dealt with them all as cases of general septic peritonitis from a misconception of the term. Two of them only properly belonged to this class and they terminated fatally. The others were cases of general purulent peritonitis with two deaths and four recoveries. He is very well pleased with his percentage of recoveries, but disgusted with his classification. He did not discriminate between diffuse septic peritonitis, the patient dying in twelve hours with profound toxemia and dry peritoneum after perforation of the appendix, and one of perforation with enormous purulent effusion, but mild symptoms of sepsis. This error of his is the common one with the profession, and it is the outcome of an attempt to classify peritonitis by the character of exudate.

The etiologic classification of peritonitis places it as subsidiary to the primary lesion which produces it and its practical import is its local origin. A painstaking investigation into the clinical history will usually determine the origin or structure primarily involved. The symptoms and physical signs, if the case is seen sufficiently early, will still further aid in incriminating the part under suspicion. This valuable diagnostic evidence does not conform to any stereotyped expression; the symptomatology of peritonitis is as varied as its causes. By the presence of any striking symptom or group of symptoms, physicians can not arrive at a decision in a doubtful case, but from the whole picture they must form conclusions.

(To be continued.)

Chicago Medical Society.

Regular Meeting, Nov. 30, 1898.

Dr. ARTHUR D. BEVAN officiated as chairman of the meeting. Dr. F. KREISSL read a paper entitled

WHY IS GONORRHEA STILL A MUCH-DREADED DISEASE?

Speaking of the cause of failure in successfully dealing with gonorrhea, the author pointed out superficial diagnosis, incorrect conception of the gonorrheal process, improper selection of the remedies, and the almost universal tendency to begin with an effective treatment too late and to discontinue it too soon, and last, but not least, the lack of individualizing cases. He stated that hard and soft chancroidal ulcers, and the presence of mucous patches in the urethra during the secondary stage of syphilis, furnished a secretion which is mistaken for gonorrhea and is treated as such, until the appearance of local symptoms on the skin and other parts of the body direct attention to the real character of the discharge. The same applies to herpetic eruptions and tuberculosis of the urethra, leading to tubercular ulcerations, which may, in rare instances, be partially symptomatic of a more or less generalized urogenital tuberculosis or, in rarer cases, it may start primarily in the urethra. Simultaneous infection with gonorrhea and syphilis is not a very rare occurrence, and the same is true of a urethra affected with secondary syphilis, in which the gonococcus may become implanted.

The treatment of gonorrhea, in order to be effective, should be commenced as early as possible, to prevent the gonococcus from penetrating the tissues, and should be kept up until the physician is satisfied that all gonococci are annihilated. Silver salts still rank highest among the antigonorrheics, and their value in destroying the vitality of the gonococcus is being more and more appreciated. For the past fourteen months he has used protargol, a silver salt, which is highly recommended by Neisser, and which favorably compares with argonin in its prompt effect and total lack of irritation of the tissues. It has a strong penetrating power, and is therefore also applicable in the more chronic cases. But in treating a case with the silver salts the physician should not forget that more or less reaction follows each application, which manifests itself as a secretion lasting for from four hours to several days, adcording to the concentration of the solutions used.

A point of importance is that the silver salts in a certain concentration do not check the catarrh, and they ought, therefore, not to be expected to dry up the canal after having annihilated the gonococci. Astringents must be used to do this, which accomplish the desired result within a very short time. When this does not take place; when even a scanty secretion appears at the meatus, or filaments in the urine, the physician must look out for complications. The most common complications are strictures, or their forerunners—glandulitis or periglandulitis—or the disease may have invaded the posterior urethra, the seminal vesicles and Cowper's glands. By stripping the parts and making a microscopic examination of stained specimens, valuable information is gained as to the nature of the secretion, and any doubt is removed if the case is one of uretrorrhea, prostatorrhea or gonorrhea. The physician rarely has occasion to see posterior urethritis in those cases of acute gonorrhea which are treated with the silver salts from the start, provided the patient observes instructions in regard to diet and habits. As to the Valentine and Janet irrigations and the Oberlander-Kollman treatment with dilatation and flushing of the canal, either following each other or simultaneously, he remarked that reports as to their efficiency in cases of acute gonorrhea are contradictory. He would not recommend either. They might perhaps, by simply washing out, do good in a very mild case at a time when comparatively few gonococci appear on the surface of the urethra, but he believes they do much harm by causing traumatism in an acutely inflamed canal. In chronic cases, where the process is confined to a limited number of follicles, the combined treatment of cauterizing by the urethroscope or dilating and irrigating by experienced hands will be found gratifying. In closing, the author quoted a remark which is attributed to Ricord, namely, that "gonorrhea is a disease which starts as a slight burning on urination, but of which only the Lord knows when and how it will end."

Dr. THOS. J. WATKINS followed with a paper on "Gonorrhea in the Adult Female."

Dr. I. A. ABT contributed a paper on

GONORRHEA IN CHILDREN.

He said that gonorrheal infection of children manifests itself primarily as a vulvo-vaginitis, a urethritis of the male child, a purulent ophthalmia, stomatitis, or rhinitis of the new-born. He discussed genito-urinary gonorrhea and complications in children. So frequently has the gonococcus been found in cases of vulvo-vaginitis, that no doubt can be felt that gonorrheal infection plays an important rôle in this disease. Cohen-Brach examined twenty-six children suffering from vulvo-vaginitis, and in every case but one gonococci were found. W. Fisher examined the secretion in fifty-four cases, in fifty of which he found gonococci. The disease occurs in children from one to 12 years of age, though it is most frequent in children under 6 years of age. As to the constitutional condition of the little girls, weakly or rachitic children are not particularly susceptible; on the contrary, the children as a rule are well developed and well nourished. As to the clinical course and symptomatology, on the inner surfaces of the thigh and on the perineum one usually observes an eczematous condition of the skin covered with a dried greenish-yellow pus. The labia majora adhere to one another. If they be separated, it is noticed that the mucous membrane of the vestibule is red and swollen, as is also the hymen, and a quantity of pus is to be seen; pressure upon the perineum will frequently cause pus to exude from the vagina. In the majority of cases the urethra is involved. It is not unusual to find the ducts of the Bartholinian glands involved, and a small quantity of pus can sometimes be pressed out of these ducts. Fisher reports a Bartholinian abscess. In many cases the inguinal glands are enlarged, particularly in those cases where eczema or excoriation exists. As a rule, the temperature is normal, though slight elevations during the first few days of the illness have been recorded. As a general thing, the subjective symptoms are trifling or absent. The intertrigo may cause itching, or there may be pain upon urination or vesical tenesmus. The disease may last for weeks or months. The urethritis may persist after the vulvo-vaginitis has terminated. Exacerbations and relapses are not uncommon. The endometrium is said never to be involved.

In children, as in the adult female, the tubes or ovaries and peritoneum may be involved. Gonorrheal pus in the tubes has been found at autopsy in five cases of girls from 7 to 9 years of age. The genitalia of little girls may be the point of entrance for the organisms which cause peritonitis. The bladder is seldom involved in little girls; a temporary vesical tenesmus, or in rare cases a temporary vesical catarrh, may occur.

Epidemics of vulvo-vaginitis have been frequently described; they occur particularly in hospitals and institutions, among the children of the poor, though none are exempt. Skutch describes what is probably the largest epidemic which has yet been reported in the city of Posen. During the month of August, 1890, 236 cases were reported, and probably many more occurred that never came to notice. These cases all developed in the course of eight to fourteen days in little girls from 6 to 14 years of age—school children. In a number of the children it was noticed that the disease occurred after they had visited on one or more occasions a free public bath. The common use of towels, soap, and the bath water may have carried the contagion from one child to the other. In the majority of cases gonococci were demonstrated. Purulent ophthalmia developed in a few, not a stated number of cases. The vulva and urethra are most often attacked primarily; the vagina, if involved, becomes so secondarily; the gonorrheal virus may be conveyed through sponges, towels, bed linen, by manipulations of the parts with unclean fingers, fever thermometers, or the contagion may, in rare cases, be conveyed by criminal assaults on little girls.

In a general way, it may be said that the prognosis in little girls is more favorable than in adults. In a majority of cases the disease terminates in three months, though there are cases recorded where a chronic urethritis resisted all forms of treatment.

The symptoms of gonorrheal urethritis in male children present much the same picture as is seen in the adult. Koplik has seen children in arms suffering from this condition. Bokai observed 109 cases of urethritis in children, many of whom, he points out, suffered for weeks or months from a urethritis. Most of these were probably gonorrheal. Twenty-seven occurred during the first year, 36 from the first to the third year, 32 from the third to the seventh year, and 14 from the seventh to the fourteenth year. Holmes has not infrequently seen cases of gonorrhea in male children. Rona says that in his fifteen cases the process was in every case a urethritis totalis, the disease becoming chronic, and usually lasting for months. Moncorvo has seen many cases of gonorrhea in small boys. Von Arsdale has frequently observed gonorrheal urethritis in young boys. One case was in a child ten months old; two cases were in children from one to four years. Dr. Abt has notes of two cases.

In private practice, as well as in hospital and dispensary practice, it is in most cases difficult to accurately elicit the mode of infection, though it can not be doubted that most

cases are due to actual sexual contact, a lesser number to manipulations of the parts with infected hands, linens, and the like. The recorded cases show that the majority of children acquire the disease from servants, or from little girls suffering from vulvo-vaginitis.

Strictures occur the same as in adults. Kammerer reports a case in a child two and a half years old, who, six months after an attack of gonorrhea, developed a stricture which did not permit the first catheter to pass. A suprapubic puncture was made to empty the bladder. Two strictures were found in the anterior urethra, and one impermeable in the membranous portion. The deep stricture was treated by performing an external urethrotomy. The anterior strictures were relieved by dilatation. Cystitis has been observed by Viger and Moncorvo. Rona encountered the complication in two cases. In one case it continued, and persistent hemorrhage occurred. It has been supposed that epididymitis and orchitis do not occur as complications, owing, perhaps, to the functional inactivity of the organs. True, the condition has been seldom observed, though Rona reports a child fifteen months old suffering from a urethritis totalis. In about twelve days after the beginning of the disease it was observed that the scrotum was swollen, and both testicles were painful. After fourteen months the patient was dismissed as cured, though a little hard nodule, the size of a pea, remained in the left epididymis. Lymphangitis of the penis, balanitis and balano-posthitis occur commonly. Rectal gonorrhea has not been observed in any of the cases previously reported.

The diagnosis presents but few difficulties, and differs in no important detail from that of adults. The specific must be differentiated from the non-specific variety. This differentiation depends on the presence or absence of the gonococci, and also upon the duration of the disease and the occurrence of complications. The gonococcus must be found in considerable number, and arranged in groups within the leucocytes. It must decolorize readily by Gram's method of staining. The best culture-medium is made from the blood or serous fluid of man. The treatment of vulvo-vaginitis, which the author considered at length, consists of cleanliness, antiseptics and rest of the parts.

Dr. D. N. Eisendrath followed with a contribution on

PATHOLOGY OF GONORRHEA AND TREATMENT OF SOME SURGICAL COMPLICATIONS.

He said: The history of the gonococcus dates from 1879, when Neisser first found it in gonorrheal pus. It is a coccus occurring in pairs, generally in the interior of leucocytes, with a clear interspace between, with adjacent sides flattened (biscuit shaped). Its size varies from .8 to 1 in length and from .6 to .8 in width. In the tissues and pus its size is uniform; in cultures it varies. It is neither a strepto- nor a staphylococcus, but has a grouping of its own which is quite characteristic. It is non-motile and divides longitudinally. It is best stained with an alkaline methyl blue or gentian violet solution. It is decolorized by Gram's method. This serves to distinguish it from all other cocci except the so called pseudo-gonococci, and the meningococcus of Weichselbaum. Lustgarten and Mannaberg described the former (pseudo-gonococci) as occurring in healthy and gonorrheal cases. It is a lemon-yellow diplococcus, decolorized by Gram's method and occurring in about 5 per cent. If all the well-known points, as to the morphology, staining reactions, enclosure and arrangement within cells be observed, a mistake in diagnosis is possible in only a small number of cases. The meningococcus, in its morphology, intracellular position, appearance in culture-media, decolorizing with the Gram stain, more completely resembles the gonococcus, but in this case as with the pseudo-gonococci, the culture-test is the only reliable one in doubtful cases, namely, the gonococcus will only grow on media in which some albumin taken from the human body is present and will not grow upon ordinary media; whereas the other cocci spoken of will grow well on all media. Bumm was the first to obtain successful results in the cultivation of the gonococcus by using human blood serum. On account of the difficulty of obtaining this serum Wertheim suggested a far more practicable medium in the shape of human blood-serum agar. Some human serum seems necessary, but ovarian, pleuritic, ascitic and hydrocele fluid can be substituted for the blood-serum. Many other media have been suggested, but none have proven satisfactory. If none of the above fluids can be obtained, a convenient method is that of Pfeiffer, namely, to allow a number of drops of blood from a previously sterilized finger to flow over the surface of a tube of nutrient agar. Surface colonies are pale, grayish, translucent, finely granular, with finely notched borders. The gonococcus is exclusively aërobic and is very sensitive to temperature.

One of the most interesting contributions to our knowledge of the gonococcus, since its discovery by Neisser and its cultivation by Bumm and Wertheim, has been made by de Christman, published last year in the *Annales de l' Institut Pasteur*. He isolated the toxin of the gonococcus from pure cultures growing in rabbit serum bouillon containing glucose, which he found better than the Wertheim medium. The injection of the toxin obtained from filtered cultures produces the same results as the cultures themselves. This toxin placed upon the human urethra, caused, after one hour had elapsed, a drop of thick yellow pus, which contained a large number of mono- and polynuclear leucocytes and epithelial cells, but no gonococci. The toxin acts first upon the epithelial cells, and the leucocytic emigration is secondary, because in the first drops taken the former greatly exceeded the latter in number. This artificial urethritis was accompanied by pain and the other typic symptoms, and disappeared gradually. It resembles the true gonorrhea in the fact that the secretion continues long after the inflammatory symptoms have disappeared. In cases in which there is a doubt as to the nature of the process, the injection of such a toxin would clear it up. In animals the injection of the toxin causes rapid loss of weight and high fever. Locally it causes abscesses, with thick sterile pus, no tendency to spread, and which heal by resorption. There are no lesions to be found postmortem. Heat has no effect upon the toxin; it can be precipitated by alcohol and extracted with glycerin. The toxin is formed in the bodies of the gonococci themselves. Injected into the anterior chamber of a rabbit's eye it produces great irritation and early pus formation. Injected into the pleural cavity, it produces rise of pulse and respiration and all the evidences of a pleuritis, with the formation of thick yellow pus. Animals can be immunized by intravenous injections of the toxin in thirty days, so that injections of pure cultures, or the toxin, have no effect. This may have a future in the treatment of some internal complications of gonorrhea.

In man the favorite ground for the gonococcus is upon mucous membranes, preferably those lined by cylindric or transitional epithelium, not excluding squamous, as Bumm claimed. It readily penetrates between the cells into the connective tissue and between muscle fibers. It grows most luxuriantly, however, upon the surface, and it is probably through the destructive action of its toxin, as de Christman has shown, upon epithelial cells and leucocytes, that pus is formed. The localization of the gonococcus in the joints and tendon sheaths may take place almost from the very beginning of the disease, and not necessarily from the time the posterior urethra is invaded, as was formerly thought, depending more upon the invasion of the deeper layers of the tissues of the urethra and bladder. They are greatly favored by trauma, excesses, or irritating therapeutic measures. It is a frequent complication of the gonorrhea of pregnancy, or of the puerperium, of ophthalmia neonatorum, or of the vulvo-vaginitis of children. No joint can be said to be free from it. It does not generally involve, or wander from one joint to another, as acute articular rheumatism does, nor does it seem to be as polyarticular. In men the knees are most frequently affected, in women the wrists and finger-joints. The disease in the joints may be acute, sub-acute or chronic. Of the former there are three varieties: the acute gonorrheal hydrops, in which there is a serous or seropurulent effusion; a second variety in which, in addition to the effusion, there is extensive thickening of the capsule and involvement of the para-articular tissues. In this variety the exudate may at times be purulent, cause perforation of the capsule and peri-articular abscesses. A third variety resembles the ordinary pyemic arthritis, with destruction of cartilage and capsule. The second variety is the most deplorable, because in spite of all treatment it leads frequently to ankylosis. In general, the tendency of gonorrheal arthritis is through the early adhesions and capsular thickening, as well as particular infiltration, to lead to stiffness, subluxation and contractures. Examination of gonorrheal joints shows as the principal changes, loss of endothelium, and under this formation of granulation tissue, it is the change to connective tissue of the latter which leads to the above results.

Gonorrheal tendo-vaginitis and bursitis are not at all rare affections. The former occurs most frequently in the tendon sheaths of the extensors in the hand, and of the tibial muscles in the lower extremity; the latter in the bursa between the insertion of the tendo Achillis and the bone. The treatment of acute hydrops should be rest and compression with or without the application of some local remedy like guaiacol carbonate. The internal administration of salicylates, etc., is of but little avail. In the second variety, with extensive capsular and para-articular involvement, if a cast or a splint does not succeed within a short time, an early puncture of the joint with wash-

ing out with some antiseptic solution, e.g., bichlorid of mercury or lactate of silver with injection of iodoform emulsion, followed by massage, active and passive movements, will give the best results. If these latter means are not employed, fairly early, even in cases in which the joint is not washed out, ankylosis is almost certain to result. When the exudate is purulent, with high temperature and threatened destruction of the joint, arthrotomy is frequently necessary. The treatment of gonorrheal tendo-vaginitis is comparatively simple. It is rarely necessary to open the tendon sheaths in order to evacuate the pus, but even here the tendency to stiffness of the fingers and toes must not be forgotten, and early massage and movements should be insisted upon.

Dr. BERTRAM W. SIPPY contributed a paper on

GONORRHEA FROM THE STANDPOINT OF INTERNAL MEDICINE.

He said: The following etiologic factors are to be considered in the production of the metastatic inflammations of gonorrhea; 1, the presence in the part of the gonococcus; 2, the action of gonotoxins produced either at the site of the inflammation, or possibly conveyed by the blood to the part from the seat of primary infection; 3, secondary infection with various micro organisms; 4, mixed infection. Arthritis occurs as a metastatic complication of gonorrhea in from 2.5 to 3 per cent. of all cases. The clinical picture of the disease varies greatly. The most common form begins with pain in several joints. In a short time one or more of the painful articulations, the knee joint, usually, begins to swell rapidly. Pain may be intense or moderate. Soon fluctuation is present. During the first few days, a temperature of 102 of 103 degrees, and other constitutional symptoms attend the local process. In a few days, the acute symptoms subside, but the effusion remains. The subacute stage continues a few weeks, until the fluid is gradually absorbed. Real suppuration rarely takes place, and when it does, undoubtedly mixed infection with pus microbes is nearly always present.

In other cases, phlegmonous inflammation of the synovial membrane, ligaments, and peri articular tissue may be accompanied by an exudate largely fibrinous in character. Stiffness of the joint is a marked feature from the beginning. Deformity may develop rapidly, and it is in this form that ankylosis is most likely to take place. Another form is characterized by peri articular inflammation only. At times, the disease manifests itself as an acute polyarticular affection, resembling acute articular rheumatism. Chronic hydrops, involving usually one joint, may result from repeated exacerbations of the ordinary form of gonorrheal arthritis, or the process may be subacute or chronic from the beginning. Above all, that which characterizes gonorrheal arthritis is its appearance as a complication of gonorrhea, the fluctuation of the joint affection, with that of the primary gonorrheal disease, and the tendency to ankylosis. Endocarditis complicates gonorrheal processes much more rarely than arthritis. The left heart is more frequently affected. There is nothing characteristic in the symptomatology, aside from the etiology.

The prognosis is always doubtful. The most favorable cases are those in which the temperature is low or normal, and the physical signs of the disease not pronounced. Cases which were clinically ulcerative endocarditis, have recovered with chronic heart lesions.

Diseases of the brain, spinal cord, meninges, cranial and peripheral nerves have been reported on good authority, in which gonorrhea was regarded as the etiologic factor. Anatomic disease, however, is rare. Relatively, the peripheral nerves are most frequently affected. The condition is either a neuralgia or neuritis. Thirty-five or forty cases of spinal cord lesions, including several autopsies, have been reported. A myelomeningitis, involving the lumbar cord, is the most common lesion. The disease may be acute, but is usually chronic. Functional disease of the nervous system is much more common. The neuroses may be general or local. There is nothing specific in the symptomatology of nervous disease complicating gonorrhea. A relatively large number of cases of myelomeningitis have recovered. Bacteriologic research has been attempted a few times. Thus far the gonococcus has not been found.

Chicago Gynecological Society.

Regular Meeting, Nov. 19, 1898.

Dr. NICHOLAS SENN, the president of the society, occupied the chair.

The society discussed the subject of

CYSTITIS IN THE FEMALE.

Dr. SENN opened the discussion by dealing with the etiology and classification. He said that the recent great advancements in the prevention and more successful treatment of infective surgical diseases are the direct outcome of the vast increase of our knowledge concerning their etiology. Surgical bacteriology paved the way for rational surgery. It is now very generally conceded that inflammation of any tissue or organ is invariably caused by microbic invasion, and that all other causes only act by determining or favoring infection. If this be true, it is apparent that the successful treatment of cystitis presupposes an accurate knowledge of the nature of the microbic origin of the inflammation. Suppurative cystitis and tubercular cystitis are so entirely different in the nature of their bacteriologic origin that the method of treatment successful in one would almost with certainty aggravate the other. Inflammation of the bladder is often the result of a mixed infection, and it is of paramount importance in all such cases to gain accurate information by bacteriologic examination of the urine concerning the part which each kind of microbe plays in the causation and continuance of the inflammatory lesion before an intelligent and successful course of treatment can be devised and carried into effect. It is of special importance in the successful management of cystitis and conditions mimicking cystitis clinically to make a sharp distinction between the cases in which the symptoms are caused by inflammation and those in which they are due to non inflammatory pathologic conditions. It will be seen from what has been said that the modern etiologic study of cystitis is based largely on a carefully conducted bacteriologic examination of the urine. The exercise of patience and perseverance is often required, as in many cases the urine has to be examined repeatedly before the necessary information is gained.

Predisposing causes do one of two things or both: 1. They effect tissue changes which determine the localization of microbes from the bladder, adjacent organs or the general circulation. 2. They furnish a nutrient medium for the growth and multiplication of microbes. The most frequent of all predisposing causes of cystitis is retention of urine from any cause. Abnormally increased muscular action of the bladder as occurs in cases of central or peripheral irritation of the nerves which preside over the muscular structure of this organ, or in consequence of the action of local irritants, as a stone, foreign bodies, tumors, chemic or toxic substances, is a recognized predisposing cause of inflammation of the bladder. Abnormal conditions affecting the quality or quantity of urine frequently precede inflammation of the bladder, and must be regarded in the light of predisposing causes. Tumors of the bladder, malignant and benign, frequently precede and complicate cystitis. A calculus or a foreign body becomes a predisposing cause of cystitis by the production of local lesions and vascular changes favorable to the localization and growth of bacteria, which are the essential cause of the inflammation. Compression of the bladder from within and from without is a potent predisposing cause of cystitis. Pressure from either direction diminishes the vascularity and nutrition of the bladder wall, and in this way increases the susceptibility of the tissues to invasion by disease-producing micro organisms. Venous stasis is a local predisposing cause of cystitis. To trauma has been assigned for centuries a direct influence in the causation of cystitis.

The essential or exciting cause of cystitis is invariably the presence and pathogenic action of microbes in the tissues of the bladder, the seat of inflammation. In the study of etiology of cystitis it is important to consider in detail the routes of infection. Under the head of exciting causes, Dr. Senn dealt with infection through the urethra, infection by the urine, infection from adjacent organs and infection from the blood.

Coming to the classification of cystitis, he said that a rational classification is essential in discussing the etiology, symptomatology, diagnosis, prognosis and treatment of this disease. He gave both Guyon's and Rovsing's classifications of cystitis. In the anatomic classification, pericystitis, paracystitis, interstitial cystitis and endocystitis were enumerated and dwelt upon at length. Under the head of pathologic classification he gave catarrhal cystitis; suppurative cystitis; ulcerative cystitis; exudative cystitis; exfoliative cystitis and dwelt upon each of these forms at considerable length. In the clinical classification he gave acute cystitis, and chronic cystitis, and in the bacteriologic classification: 1, bacillus coli commune infection; 2, saprophytic (mixed) infection; 3, staphylococcus infection; 4, streptococcus infection; 5, streptococcus erysipelatous infection. 6 typhoid bacillus infection; 7, diplo bacillus infection; 8, Gonococcus infection, and 9 bacillus of tuberculosis infection. The bacteriologic classification of cystitis is the most modern and certainly the most important. It has a direct bearing on the etiology of the disease, and suggests to the surgeon the most rational course to pursue in its treatment. In long standing and obscure cases of inflammation of the bladder, examination is not complete without examination of the urine

with sufficient care and thoroughness upon which to base a correct bacteriologic classification. Surgeons must learn to appreciate the value and importance of this part of the examination before they can expect material advances in the treatment of cystitis. If the surgeon has not the necessary knowledge or equipment to make these examinations satisfactorily, he should assign this part of his task to a competent bacteriologist.

Dr. JOHN A. WESENER followed with a paper on the

CHEMIC AND MICROSCOPIC EXAMINATION OF THE URINE, WITH SPECIAL REFERENCE TO THE DIAGNOSIS OF CYSTITIS.

He said that very little had been done on the microscopic and chemic examination of the urine in cases of cystitis. It is true, we are told to differentiate cystitis from pyelitis by the character of the epithelium present. In the case of females, in whom cystitis is suspected, the urine should be obtained by the catheter. If this rule be followed, it will avoid the possibilities of contamination from the vagina. Cystitic urine may be either acid or alkaline. If the infection is by the bacillus coli, it is acid; if in addition it becomes infected with the bacillus vulgaris, it becomes alkaline. Of 200 cystitic urines examined, 68 per cent. were acid and 21 per cent. alkaline. Of the alkaline urines found, decomposition took place in some after voiding. The reaction of the urine no doubt depends on the character of the bacteria present. The works of Rotoski, Krogins and Müller justify the above assertion. Müller found cystitic urine acid in 75 per cent. of all cases examined by him; while Melchoir showed from an analysis of sixty-two cases, that ammoniac decomposition is only a subordinate circumstance in cystitis, depending solely on the microbe present. The most important of these is proteus vulgaris.

To differentiate cystitis from pyelitis, Dr. Wesener proceeds as follows; In cystitis there is always more pus than in pyelitis, and for this reason kidney epithelium is found more readily in pyelitis because of the smaller amount of pus present. After centrifuging the urine, it should be tested for the amount of albumin it contains. In cystitis it is found absent or present, depending on the amount of pus; whereas, in pyelitis, a considerable quantity of albumin is always found. The explanation for this difference is due to the fact that the kidney is a much more vascular organ than the bladder; therefore, exudation takes place more easily. Red-blood cells are found more frequently in pyelitis than in cystitis. In pyelitis casts are often found. Clinically, we might succeed in distinguishing these two conditions by washing out the bladder with sterilized water immediately after urination; examine the urine collected, and also the washings for pus. If the water contains a considerable amount of pus, it is probably cystitis.

Dr. WILLIAM T. BELFIELD then discussed

INSTRUMENTAL EXAMINATION OF THE BLADDER IN CASES OF CYSTITIS.

He said that twenty years ago cystitis was a clinical entity characterized by the presence of three symptoms—retention, frequent and painful urination, and pus in the urine. To day it clinically had receded from the rank of an entity to that of a symptom. The symptoms considered characteristic of inflammation of the bladder today, such as frequent and painful urination and pus in the urine, are now known to be caused, not merely by inflammation of the bladder as a whole, but also by infections, injuries to certain limited parts of the bladder, etc. Now, other parts of the urinary organs are involved, such as stricture of the urethra, and morbid conditions of the pelvis or the kidney. The reason why the cystitis has thus receded from the first and second ranks from that of an entity to that of a symptom has been especially set forth by Dr. Senn, viz., that cystitis is always to be considered in the nature of a bacterial infection, and that the bladder is not susceptible to bacterial infection when it is in a normal condition. The reason why so much advance has been made in the matter of cystitis is because of the improvement in means for the mechanical examination of the bladder. Twenty years ago the sound was the only instrument in use. It revealed the existence of stricture, of foreign bodies in the bladder encrusted with urinary salts, and with the aid of the finger, prostatic hypertrophy in the male. It is true, the finger was sometimes used for the investigation of the female bladder, but it was not generally recognized nor a universally employed measure. Dr. Belfield then referred to the value of the cystoscope as affording means for inspecting the entire wall of the bladder. There are instances on record in which stones have been entirely cut off from the general bladder cavity under diverticula, but they are rare. There are plenty of others which present a free surface to the bladder cavity, but in such localities as to be entirely beyond the reach of the sound. He related a case in which the ordinary symptoms of chronic cystitis were present, and likewise symptoms strongly indicative of stone in the bladder. The man had had the matter of castration strongly urged upon him, but fortunately refused. An examination without an anesthetic failed to discover stone; the cystscope at once revealed a stone near the protruding part of the prostate, just above the urethral orifice. A couple of weeks later the man was operated upon. When the patient was chloroformed, sounds were introduced with curvature likely to lead to the locality where the stone was known to be located. Dr. Belfield was unable, however, to touch the stone. A suprapublic incision was therefore made and the stone removed. Cases of this kind show the extreme value of the cystoscope.

Dr. M. L. HARRIS followed with a brief paper entitled

INSTRUMENTAL EXAMINATION OF THE BLADDER IN THE DIAGNOSIS OF CYSTITIS IN THE FEMALE.

His remarks were confined entirely to instrumentation of the bladder as bearing upon diagnosis, and were still further limited to a consideration of his own instrument—the urine segregator—which posesses the following advantages:

1. It collects the urine, so that it may be analyzed.
2. It does this without entering the ureters, thus obviating the danger of infecting the kidneys.
3. It not only enables the physician to differentiate bladder from kidney disease, but to determine the exact condition of each kidney, which is so essential in all diseases of the urinary tract.
4. Its use is so simple that extraordinary skill is not required.

Dr. JAMES H. ETHERIDGE read a paper entitled

REMEDIAL TREATMENT OF CYSTITIS IN THE FEMALE.

He said that the treatment of cystitis is conveniently subdivided into constitutional and local. The constitutional treatment consists chiefly of the use of remedies to increase the functions of the alimentary canal, of the skin, of the use of agents whose action so changes the character of the urine that it shall be unirritating to the diseased organs, and of medicines that can relieve pain and vesical tenesmus. Diet also falls under this heading. A soluble condition of the bowels should be maintained daily by salines, taken on the empty stomach, before breakfast. It is of prime importance to bear in mind that a glass of hot water taken immediately after the saline will energize the latter wonderfully, so that a diminished quantity of the drug will suffice. For example, a glass of hot water will make one-half or even one third of the dose of Hunyadi water that will move the bowels, effective and satisfactory. It is a matter of therapeutic experience that three daily bowel movements contribute to relieve the sufferings of an inflamed bladder. Diversion of the blood-current toward the intestinal canal under saline laxatives tends to diminish the amount of blood in the walls of the bladder. He recalled two cases of hypercatharsis in women with cystitis, one from physic and the other from a poisoned food product, wherein recovery in one and great temporary relief in the other case followed. The diet of cystitis patients should be carefully regulated. Milk is the most universally used agent. For the relief of pain and tenesmus, analgesics are demanded. Opium is the supreme agent for the relief of vesical suffering. It can be used as Dover's powder, with camphor, also in rectal suppositories. It has its drawback, most decidedly, in the way of deranging the secretions and excretions. Its chief objection is the induction of the opium habit. Other agents, as chloral hydrate and the bromids, very often bring relief from pain. They are without the objections of the opium. The indications for the medical treatment lie chiefly in the reaction of the urine. If the urine is too acid, or very acid, it should be alkalinized. It it be alkalin, remedies must be given to change such reaction. Remedies can be given by the stomach to accomplish these ends. The treatment of all cases of cystitis involves two classes of remedies—those for use by way of the stomach, and those for use in the bladder. The second subdivision of the remedies used internally in cystitis is the class called germicidal agents. Their name is legion. Many of them have been used for generations. The older germicidal remedies include creosote, used especially where tubercle bacilli are found, cubebs, copaiba, oil of sandalwood, tar water, uva ursi, buchu, sodium salicylate, pareira brava, and the sulphocarbolates. Under this division come the balsams and the terebinthinates. These remedies are all old, but they are reliable.

The essayist next dwelt on the important remedies for local use in the bladder. Before using medicines in the bladder, this viscus must be washed out with a normal sterilized salt solution, a dram to the quart, or with a saturated solution of boric acid. He uses the latter wholly. The injection must be small in amount, usually an ounce or two in severe cases, and given slowly. The selection of the remedy for intravesical application depends somewhat upon what the urinalysis reveals.

In all cases of simple cystitis the sovereign remedy is silver nitrate .1 to .5 per cent. In obstinate cases, this is one of the most reliable agents in strong solution, say twenty grains to the ounce. Of this five or ten drops only are used. The smallest amount should be used at first, larger ones later. Its use is not very painful; only exceptionally is it so. One to three or four drams can be used. At first it can be used once in two days; later, daily, till its further use can be discontinued. Simultaneously with its use, needed remedies by the stomach must be given for acting on the urine. The local treatment of the bladder should be performed with complete antiseptic precautions. The first thing done should be to wash out the bladder as completely as possible with saline solution or with a saturated solution of boric acid. In the majority of cases of cystitis this line of daily treatment is sufficient. When no improvement occurs in ten or fourteen days, the mild solution of the silver nitrate can be used with every expectation of a successful issue. Many physicians use this agent to begin with, claiming that since silver nitrate is the chief of all remedies for inflammation of mucous membranes and that days of time are gained by commencing all treatment of cystitis by using it. Such a claim sounds well, and it seldom disappoints the physician. Cases that resist all local and general treatment combined fall under the surgeon's hands.

Dr. ALEXANDER HUGH FERGUSON made some remarks on

THE SURGICAL TREATMENT OF CYSTITIS IN THE FEMALE.

He thinks chronic cystitis demands surgical treatment. In cases of cystitis in the female, local applications can be made through the cystoscope, and curettage could be performed. The application of nitrate of silver, and various topic applications, can be made to inflamed areas and ulcers of the bladder. Suprapubic cystotomy in the female has been done and there may be some cases calling for its performance, still he believes there is very little benefit to be derived from drainage suprapubically. Colpocystotomy, as practiced in cases of cystitis in the female, needs only to be mentioned to be condemned. Draining the bladder through the vagina, causing great discomfort and discharge of urine through that avenue, necessitates subsequent operation to cure the vesicovaginal fistula. He only did this operation once, and he always regretted it because he had to do three subsequent operations before the vesicovaginal fistula was closed. A careful examination should be made of the uterus and tubes. Examination of the kidneys should receive attention before the bladder is treated, sometimes after. If there is a tubercular condition of the kidney, it had better be treated surgically before the secondary vesical condition, because extension of the disease to the kidney is much more dangerous than extension of the tubercular disease of that organ to the bladder, which can be treated secondarily.

Dr. G. A. KLETSCH of Milwaukee, in the general discussion which followed the presentation of the above symposium, by invitation, read a short paper on

THE PREVENTION OF CYSTITIS IN THE FEMALE.

He said: An irritated condition of the bladder producing a congestion is frequently present in the female; but as soon as the cause of the irritation is removed, the bladder symptoms disappear. This was best illustrated to him in his hospital days by a demonstration of Dr. Emmet's. In a posterior parametritis, he would fix the cause of an irritable bladder, which would have eventually ended in a cystitis, in inflammation of the uterosacral ligaments. He contended that the inflammation in them soon led to contraction and shortening, and consequent dragging of the uterus into the hollow of the sacrum. This made tension on the neck of the bladder at its fixed point under the symphysis pubis, the base being attached to the cervix. He buttonholed the urethra to relieve this strain, thereby allaying the frequent desire to urinate, and then treated the seat of the disturbance to overcome the cause of the trouble. This teaches two things in the prevention of bladder troubles: 1, to avoid introducing a cause from which a cystitis might arise; 2, to relieve the patient of the one present without the introduction of another through any action of the physician. One condition alone can long exist without ending in a cystitis. In the autopsy room he has examined many a case, in which a hyperemic condition of the mucous membrane of the bladder was found, this not having developed further than an increase of the vascularity of the part. Frequently the intense vascularity indicated that it must have been of long standing, and still no inflammatory process resulted. The one element alone was present, which in itself was not sufficient to bring about a cystitis.

It is a question in his mind whether infection alone can produce a cystitis. Experimentation on animals has been carried on to decide this point. When the infectious material was carried into the bladder, was there not a lesion produced which was the seat of inoculation? When called upon to enter the bladder, the one element was present, usually a congestion, and the physician introduces the other from without through the passing of the catheter. This behooves physicians to practice great care when they are called upon to exercise this function. Not only must all infection be removed from the parts under observation, but the instrument used must be thoroughly sterilized. Care must also be observed not to lacerate the tissues; for if the bladder contains decomposed urine, as it usually does, infection would find a fresh nidus by which it could enter and bring about its work of destruction.

Further discussion of the papers was participated in by Drs. F. Kreissl, E. C. Dudley, Albert Goldspohn, William Cuthbertson, Charles S. Bacon, L. L. McArthur and Lester E. Frankenthal.

French Congress of Surgery.

Held at Paris, October 18 to 22, 1898.

GUYON delivered an able and interesting address on

NEPHROTOMY

which, he observed, should aim to destroy the smallest possible amount of the renal parenchyma, bleed as little as possible and expose the maximum of renal tissue. This is best accomplished with a lumbar recto-curved or oblique incision. After having freed the organ from its adipose envelope, it is drawn out as much as possible and the pedicle compressed by an assistant. The organ is then opened with a long incision on its convex edge extending into the pelvis. By introducing a finger into the organ and palpating from the outside with the other hand, a calculus could scarcely be overlooked, although lesions of miliary tuberculosis might escape observation in the cortic substance, and even a neoplasm, as in an instance related, in which the lesions seem insignificant, until the microscope revealed the structure of alveolar cancer in a small fragment of false membrane discovered, and nephrectomy confirmed the existence of a renal neoplasm which had escaped attention. He considers nephrotomy superior to pyelotomy for the removal of calculi, except in the one case when palpation demonstrates a regularly shaped, medium-sized calculus in the pelvis. The best incision for nephrostomy is the lumbar recto-curved or oblique, downward and outward. This incision at once reaches Henle's vertebro-costal ligament, useful in managing the pleura. After having incised the convex edge of the organ and explored the inside, the walls between the different divisions should be destroyed as much as possible, and to avoid purulent peripheral lesions and facilitate future operations, the two valves of the renal tissue should be sutured to the lips of the parietal wound, as close to the integument as possible, thus evacuating and re-establishing the function of the kidney in case of anuria. He called attention to the remarkable tolerance of the kidney for this operation, with or without previous retention. Notwithstanding the free communication of the organ with the exterior and the drainage, infection does not invade the tissues. There is merely a slight sclerosis extending inward more or less from the edges of the wound. The renal tissue is not affected and the urine of a nephrostomized kidney scarcely differs from normal. Nephrostomy seems the superior operation in most cases of calculous anuria, and the only operation in serious cases. Both kidneys are usually more or less affected even in simple primary liathiasis, and in most cases the other kidney is no longer working properly when the anuria appears. It may seem normal in some cases, but is still liable to have lesions of an aseptic nephritis when render it particularly sensitive to the inhibiting influence of a reflex emanating from the other kidney (Guyon's reno-renal reflex). Nephrostomy is far from the ideal conservative operation in uronephrosis. The cause should be removed if possible, with ureteral catheterism, nephrorrhaphy, ureterotomy or utreteropyelostomy. But if the other kidney is destroyed and it is indispensable to retain all of the renal parenchyma that has been spared, then nephrostomy is directly indicated. The advantages of nephrostomy in simple pyonephrosis are evident. The objection of the fistula has been shown to be unfounded, as in many cases it heals in a few months or even several years after the intervention, and the more readily, the greater the destruction of the kidney. In certain cases the fistula can be prevented or healed by simple permanent ureteral catheterism, or by operations re-establishing the normal course of the urine. Secondary nephrectomy always offers a last resource when healing is evidently impossible and the secretion of the kidney has no longer any actual physiologic value. Nephrostomy is almost always preferable to interventions aiming to re-establish the normal course of the urine. These should be made later, after the

nephrostomy, when the general and local conditions are improved. Guyon's experience with nephrostomy in tuberculous pyonephrosis has been unfavorable. The improvement is always transient. The fistula has always persisted and no patient survived over two years. He prefers nephrectomy in these cases, if the other kidney is normal. The mortality of primary nephrectomy as published is 28 per cent. and of secondary nephrectomy 34 per cent. His experience has been sixteen recoveries out of seventeen primary nephrectomies for renal tuberculosis. Summarizing his cases with those of Czerny, Bardenheur, Küster, Israel, Tuffier and Routier, he has a mortality of 10 per cent. while the mortality was 17 per cent. in 84 nephrostomies for renal tuberculosis. The latter operation is therefore only indicated when there are other advanced tuberculous lesions which would render nephrectomy impossible. In such cases it is well to take advantage of the undoubted palliative relief of the permanent opening of the kidney, although, after several weeks or months, the phenomena return as before. Radiography has not fulfilled the hopes of its application to the kidneys.

Le Dentu recommended multiple punctures all through the organ, and nephrotomy, in case of nephritis with much pain, persisting months and years in spite of medical treatment.

Reynier's experience has been the necessity of a secondary nephrectomy in every case nephrotomized, and he considers primary nephrectomy no more serious than secondary.

Bazy rejects as useless or impossible the fastening of the renal edges to the skin. He makes his incision from the costo-muscular angle to a point two or three finger breadths above the highest part of the iliac crest. After nephrectomy he places a bougie in the ureter through the pelvis, to ensure the permeability of the tunnel and prevent its obstruction by clots or pus after the operation. He recommends cystoscopy and the use of methylene blue as the best means of exploring the condition of the other kidney, observing that catheterism of the ureter may carry the infection into a sound ureter from an infected bladder. He reports only two cases in fifty nephrotomies, in which he had to operate twice, and only three in which a secondary nephrectomy was necessary. Tuffier reported fifty-seven nephrotomies: in three cases through an abdominal incision, with the precaution to suture the prerenal peritoneum to the parietal peritoneum before opening the purulent pocket of the pyonephrosis. He noted in many cases the existence of very small, almost microscopic foci at the nephrotomy, which developed later into multiple abscesses. He considers nephrectomy indicated not only for lithiasis and pain as suggested by Le Dentu, but also for renal hemorrhage and certain forms of nephritis. It should be performed as early as possible. He rejects nephrotomy in cases of hydronephrosis, preferring plastic operations to re-establish the course of the urine.

Doyen reported a patient cured and in perfect health eleven years after nephrotomy, preceded by an incision of the kidney which showed it invaded by miliary tuberculosis. He avoids the dangers of retrograde catheterism by first carefully rinsing out the bladder and then having each ureter compressed in turn. Pus is then found in the urine after compression of the ureter on the side of the suppuration, but if the other kidney is sound no pus is found after the bladder has been rinsed again and the other ureter compressed.

Legueu described a case in which nothing was found at the nephrotomy, and yet the patient was very much benefited by the purely exploratory operation. The trouble had evidently been renal neuralgia in a very nervous woman.

Albarran observed that a fistula is rare in a kidney not distended at the moment of operating, outside of tuberculosis. But when there is retention a fistula is frequent, on account of the constriction, the bending, or the vicious insertion of the ureter in the pyelorenal pocket. When the course of the urine through the ureter is once established, the fistula closes spontaneously; this he accomplishes by inserting a permanent sound. In case of a fistulous opening, if the analysis of the urine indicates benefit from retaining the organ, he inserts a sound, replacing it by larger sizes during the days following, using it for irrigations of the kidney pocket and withdrawing it in a fortnight. If in spite of the closing of the fistula, there are still indications of retention, he inserts the sound as far as it will go, and then incises the kidney, finding the ureter by means of the sound, and performing ureterotomy, ureteropyeiostomy, uretero-pyeloneostomy, autoplastic resection of the kidney or "capittonage" of the pyelorenal pocket. With a purulent fistula a careful diagnosis should be made with ureteral catheterism. If the kidney secretes pus through the sound, cleanse and open wide the perirenal foci. The kidney should not be extirpated unless it is imposible to empty these foci without ablation of the organ. If the kidney is not secreting at all, nephrectomy is indicated. In regard to operations to re-establish the normal course of the urine, he advises not operating at the same time as the nephrostomy, but waiting for the inflammation to subside. He also recommends not hurrying the healing of the fistula. After a while the ureteritis may subside and the conditions become more favorable.

Phocas reported a case of six months' insanity consecutive to a nephrotomy.

Delbet described the remarkable result of nephrotomy in a man of 60 years, too weak from his tuberculous pyonephrosis to undergo nephrectomy. Five liters of pus and 360 c.c. of cheesy substance were removed. He curetted every three or four days, and injected iodoformed ether every second day. The patient was dying at the moment of the intervention, but recovered, has gained in weight and seems quite well a year later, still keeping his fistula.

Loumeau related a case of severe renal hematuria nephrotomized and cured, although no appreciable lesions were discovered.

Jonnesco also emphasized the absolute benignity and unquestionable efficacy of nephrotomy and nephrolithotomy, followed by the immediate suture of the kidney.

Chibret reported the unique case of a vigorous man of 55 years, in good health except an attack of nephritic colic and complete anuria. A nephrotomy failed to show any calculi or gravel, but the kidney was nearly twice its normal size, purple, very much congested and so friable that when he tried to draw it out to the wound, his fingers sank into it as into a soft substance, and it was with the finger that he opened it down to the pelvis; smooth recovery.

Reverdin of Geneva, in his address on

THE SURGICAL TREATMENT OF GOITER,

stated that the mortality in 6103 operations has been 2.88 per cent., but eliminating the older, complicated cases, the mortality would be very little above zero. The mortality from total extirpation has been 26 deaths in 137 operations; from interglandular enucleation, less than 0.78 per cent.; from the combined methods, 2.99 per cent.; from Mikulicz' resection, 6.66 per cent., and from partial extirpation, 3.56 per cent. Several enlarged upon the dangers of chloroform and expressed their preference for cocain in their operation.

Doyen inserts a tube in the larynx, by which means he can use chloroform at will. He stated that with his "crushers" he can perform thyroidectomy in five to ten minutes.

Roux mentioned that he had long ago discarded chloroform anesthesia, but that he found pulmonary disorders afterward, usually attributed to the chloroform were as frequent as without it. Hundreds of enucleations were reported by other members with only one death (paralysis of the heart).

Girard operated on one woman in labor on account of imminent suffocation. The child was born dead but the mother recovered.

Berard mentioned that after partial operations on the thyroid, fever and nervous phenomena are frequently observed, not serious, evidently due to the liberation of substances normally secreted by the gland which produced the "thyroid fever."

Picqué classified "Otitic Suppurations" as osteodural, intradural, pericerebellar and intracerebellar abscesses, the latter either cortical or medullary and requiring more than simple trephining—an osteoplastic operation with a mastoido-occipital flap, retro- and sub-sinous, which allows full inspection of the cerebellar pocket.

Landolt extolled the advantages of his method of treating strabismus—detaching the muscle and attaching it with a couple of stitches near the cornea. In case of extreme strabismus he combines with the advancement, the resection of the tendon end of the muscle, and supplements the operation with orthoptic exercises.

Faure suggested treating facial paralysis by an anastomosis between the peripheral end of the facial nerve and the end of the spinal nerve—the trapezian branch severed at a convenient point.

Coudray recommended resection of the external branch of the spinal as the best treatment for spasmodic torticollis.

Calot reported many cures of affections of the cervical glands without scars by injecting two or three grams of a fiftieth solution of chlorid of zinc with a very fine needle three or four times, with an interval of two days, completing the cure with injections of camphorated naphthol.

Jonnesco reported six recoveries in sixteen operations of temporary craniectomy (fourteen hemicraniotomies, two partial craniectomies; in four cases resection of the cortex to a greater or less extent. In eleven cases the operation was performed to relieve edema of the brain. One patient died from hemorrhage; two from later development. The six recoveries included two

of traumatic and one of Jacksonian epilepsy, two hysteria with prostration and idiotism, with mania. There were two much affected; six were unaffected by the operation (two epileptics with acute mania and four idiots.

LEGUEU described a case of extirpation of a mammary neoplasm, in which an early recurrence required operating, leaving a large defect. As all the available flaps had been used in the first operation he detached the sound breast and sutured it with the nipple on the median line, as a large flap, with success.

FROELICH reported twelve recoveries in twenty-six cases of Potts' disease in infants, which he treated by strapping the child, dressed, to a board in extreme lordosis. Four died and ten are still under treatment. He noted that the paralysis is localized in the two members, but is never absolute.

TUFFIER announced that his attempts to cause atrophy in inoperable tumors with "atrophying ligatures," had failed to produce the slightest curative effect, although as a palliative measure they procure the cessation of the ichorous and other discharges.

LARGER stated that he had found local or general baths of saturated solution of potassium chlorate extremely effective in relieving the pain in extensive burns. He continues the application of the chlorate in compresses on a superficial burn, and treats a deep burn as an ordinary after the pain has been relieved. The fact was emphasized by several, that patients apply earlier for an operation now than formerly.

ROUX observed in the conclusion to his review of two years of gastro-intestinal surgery, that the Y-posterior-gastro-enterostomy, with a suture in three stages, is not in itself a dangerous operation, notwithstanding its length and the possible escape of a little of the intestinal contents; as in twenty-four gastro-enterostomies for pylorus affections he has not lost a single patient. The operation was completed in forty-three minutes. Almost all were cicatricial constrictions or fibrinous rings from old gastroptoses.

TUFFIER observed that he did not decide upon the method of "abouchment until after he had removed the tumors and considered the conditions left. His record is, sixty-two operations on the stomach; fifty gastro enterostomies, with two deaths; nine pylorectomies (three deaths and six cures) and three operations limited to detaching adherences.

DOYEN advocates the Y-anastomosis, like Roux, but makes the abouchement lateral instead of terminal, which reduces to the minimum the orifice for the passage of the bile into the jejunum, thus avoiding the regurgitation of bile. The gastro-enterostomy should be as far as possible on the face of the stomach and transmeso-colic. This insures the slope and emptying of the stomach contents.

DOYEN was the first to propose surgical intervention for non-cancerous affections of the stomach, not only for ulcer and cicatricial stenosis, but for spasmodic contraction of the pylorus with enlarged or contracted stomach. His method of pylorectomy consists in isolating the tumor, holding the gastro-colic omentum out of the way with a few ligatures, then applying his "crushers" beyond the tumor on the duodenum, reducing the intestine to the single thickness of the serous coat. A double ligature is placed in the groove and the intestine cut between the two ligatures, thus avoiding the escape of any fluid. The resulting stump is pushed back into the duodenal cavity with a double "purse" suture, after having removed, with scissors and thermocautery, any scraps of mucosa beyond the thread. The same operation is then done on the side toward the stomach, which can be pivoted outward. The forceps must be applied twice and a strong thread tied firmly in the groove. If the tumor is small a double purse suture is enough, but if large, a couple of superposed rows of overcast sutures are required. He proceeds to the gastro-enterostomy by perforating the mesocolon, and drawing down the posterior face of the stomach. The edge of the orifice of the mesocolon is overcast to the stomach, preventing the strangling of the small intestine at this point. The loop of the jejunum is drawn up, fastened to the stomach, and a lateral anastomosis made, after which the origin of the jejunum is sectioned with the "crushers" between a double ligature. The two stumps are finished as before with the purse suture. At this moment the stomach communicates with the jejunum laterally anastomosed, the upper end of which forms a cul-de-sac. The duodenum and the origin of the jejunum have become a tube closed at both ends. Nothing further is required except a lateral jejuno-jejunal anastomosis with a very small opening for the bile. The duodenum by this process becomes a prolongation of the common bile and the pancreatic ducts. This method of operating: "crushing," the purse ligature, and Doyen's elastic jaw forceps, realizes the most aseptic conditions, allowing gastro and enterostomosis without any contamination of the field by fluids from the alimentary canal. He applies the same method to all his operations on the stomach, small or large intestine and especially to the resection of the appendix (*vide* JOURNAL, page 73).

LUCAS-CHAMPIONNIÈRE confirmed the great advantages of his method of mobilizing fractures from the first (*vide* JOURNAL, xxviii, page 1034).

MASSE reported that a number of dogs that had cholecysto-gastrostomy performed on them over a year ago, are still well, with normal digestion in spite of the presence of bile in the stomach. The common bile duct had been ligated in the middle in most of them. The results indicate that this operation could be applied successfully to man in case of total obstruction of the bile-duct. The tolerance of the stomach for the bile also indicates that the care taken to prevent possible reflux of the bile into the stomach in gastro-enterostomies has been unnecessary.

GUINARD mentioned, as an aid in the diagnosis of perforating gastric ulcers, the appearance of the pain as a sudden sharp stab, near the left false ribs on the nipple line; the peculiar form of the tympanism and the ballooning of the abdomen and, especially, the record of the gastric past. Only two successes were noted in the eleven cases operated reported by several present.

WALTHER has observed the pain in two cases occurring in the lower abdomen, where there was an encysted peritonitis, connected with the perforation by adherences.

DELAGENIÈRE reported ten cases of surgery of the bile passages, mostly abouching the gall-bladder through the rectus muscle in the anterior fascia of the muscle; one death. The cholecystostomy not only disinfects the bile passages and diverts the course of the bile, at least temporarily, but prevents any increased tension in the passages, thus avoiding rupture of the sutures and the escape of bile. Thanks to the fistula the sutures can be relied upon to hold.

ABADIE observed that section of the cervical sympathetic as theoretically indicated in a number of disturbances in certain organs caused by permanent excitation of the vasomotor nerves, leading to disordered nutrition, and that other affections besides exophthalmic goiter and glaucoma, may be found amenable to the same treatment. He added that we should study the morbid phenomena that may be determined in the viscera of the thorax and abdomen by the vasomotors of the sympathetic in these regions.

TEMOIN related an instance of fetal exaggeration of the symptoms in exophthalmic goiter consecutive to bilateral resection of the cervical ganglia.

JONNESCO reported six cures and four improvements in ten cases of exophthalmic goiter thus treated, adding an account of the excellent results attained in 45 cases of epilepsy and 7 of glaucoma with resection of the cervical sympathetic.

Next year the congress will discuss the questions: "Total Abdominal Hysterectomy," and "Tumors of the Bones," with addresses by Ricard, Pollosson and Berard.

SELECTIONS.

Shall the Consultant Pay the General Practitioner for Cases Referred to Him?—A contributor to the *Colorado Medical Journal* raises this question for discussion and argues for an affirmative reply as regards certain cases. His argument fails to satisfy the positive ideas of ethics of the editor of the *Philadelphia Medical Journal*, whose comment provokes a rather severe rejoinder in the first-named journal, and elsewhere the question is being taken up and discussed. The original proposer of the discussion, who shows his sincerity and earnestness by signing his name to his communication, argues simply that the general practitioner, before referring a case to the specialist, sometimes gives it a certain amount of attention, for which the patient will not pay him; and that therefore the specialist, who is benefited by such reference, should reimburse him. The rightfulness of paying for cases referred in this way must, however, be considered quite apart from the excuse of seeking by secret connivance to extort from an unappreciative patient, what may be rightfully due to his regular medical attendant. It involves more important influences and issues. There is reason to believe that it has been resorted to without any such plausible excuse; and by those who have not the manliness to avow such a practice, although they might hope that an avowal

would bring to them patients from such doctors as were willing to advise patients to go where it would be most to their own (the doctors') pecuniary advantage. While it may be a very small proportion of the profession who are liable to do any loose thinking on this subject, loose thinking does lead to loose practice, and on that account the subject is worthy to be generally discussed and to have its different aspects clearly presented. Even dropping all appeal to what are called higher motives, and considering it solely from the standpoint of selfish pecuniary interests, there is more than one side to the question. From the side of the general practitioner it may well be asked: Will the peddling of the patients prove permanently profitable? While it might be anticipated that there would be lively bidding among rival specialists, and that the young, inexperienced and ambitious would presently be willing to turn over the whole fee for the sake of experience and *eclat*, other things must be thought of. Can the general practitioner always land his patient in the net of the specialist who will charge the largest fee and share it most liberally? Can the transaction be repeated with the same patient or any of his friends? Will the patient so referred ever return to the general practitioner at all? Will not the specialist, instead of regarding the patient as leased, regard him as transferred in fee simple, and be shrewd enough to see that the way to recoup is by himself referring the patient to the next specialist, and so on until the patient can no longer be "referred" (sold), or is not worth "referring?" While the specialist may think it would pay to give a good percentage for patients, and so keep busy, gain experience, and come to be known as a rising specialist, instead of spending years of waiting in hard study of literature and the minute investigation of his few cases; while it may appear probable that the occasional reluctance of the general practitioner to give his patient the chance of benefit by the specialist's "superior knowledge and skill," would pass away under the influence of the proper percentage; while one might hope that the general practitioner with a direct pecuniary interest would be able to discover more cases of cataract, appendicitis or retroversion requiring operation, and even succeed in steering his neighbor's patients to his own pecuniary advantage, it must not be overlooked that the general practitioner who enters upon such a course may become too grasping—may prefer a larger fee to a smaller; and thus become the canvasser for the embryo specialist, or recent graduate who can afford to pay most for the opportunity to gain experience and advertise himself to the community. Then what will one's reputation be worth when the truth leaks out that it is built upon recommendations for revenue only? But when it comes to considering the scheme from the standpoint of the patient there ceases to be anything to consider, for no such plan can be put in operation with the consent of the patient. He will not knowingly pay indirectly through the specialist a fee that he would refuse to pay directly to his family physician; and if he knew that he was advised to go to a specialist who would divide the fee with his adviser such advice would not be worth giving. Only when all the parties directly concerned understand its nature, and agree to it, is a business transaction legitimate or honest. What is taken by stealth is stolen. If you claim that it is not theft to take what property belongs to you, the reply is that taking it by stealth always raises the presumption that it does not belong to you. The payment and acceptance of a fee from the specialist without the knowledge of the patient belongs exactly in the same category as collusion with the apothecary for a percentage on prescriptions. Only when the thing is done with the full knowledge of the patient can the referring physician rise from the level of a bunco-steerer to that of the paid agent or respectable drummer of the specialist. If any physician wishes to serve his patients as a professional adviser he must preserve his patient's respect and his own self-respect by openly demanding a proper recompense for his services, and properly enforcing that demand. He must not seek to obtain secretly and through the aid of another, what he is afraid or ashamed to ask openly. That would be a poor way indeed to dignify his calling and teach a proper respect for his services.—*Philadelphia Polyclinic*, December 3.

Hawking Physicians.—There may have been a time when the physician to some royal court found time and was permitted to engage in the sport of hunting with a hawk upon the wrist. Our present remarks do not apply to this kind of gaming, but to a less ennobling pursuit of crying one's wares upon the street or peddling them out for the highest price obtainable. Several of our contemporaries have had much to say of late upon the subject of commissions paid by specialists to general practitioners for cases referred to them. That there exists any very considerable amount of such reprehensible practice we are not inclined to believe, but that reference cases are at times paid for on the one side and the dividend freely accepted on the other is undoubtedly true. More's the pity. What has been called "bargain-counter" surgery, especially in the realms of abdominal and pelvic pathology, must have some existence in fact, or one would not hear of it from so many different sources. The blame has been placed almost exclusively at the door of the specialist, but one correspondent touches the keynote, it would seem, when he says that "country doctors frequently go about from surgeon to surgeon, seeking the highest bidder." It would not be surprising if equal blame were to be attached to him who has the case to sell and to the one who is willing to buy. It was some years ago that many reputable surgeons in this city were shocked in their finer susceptibilities by a down East doctor who landed in town with six laparotomy cases, which he proceeded to farm out on terms most advantageous to himself. Many of the surgeons approached had not before heard of such shrewd businesslike methods being applied to human existence, and very properly showed the visitor the door. Undoubtedly these surgeons would pursue the same course today. It is at least to be hoped they would. Whether or not this hawkster succeeded in finding an operator sufficiently devoid of ethical honesty to offer the proper "divy" is not divulged. He may have taken the subjects to one of our neighboring cities, where so great a cry has gone up against the giving and accepting of commissions as to lead one to infer that the practice is much more prevalent than with us. Or he may have gone with his half-dozen protruding females back to his quiet New England village, and by operating upon them himself secured the whole of a smaller fee. Whatever may have been the outcome of the pilgrimage, the lesson must have been learned that because one man "sells" another does not always feel inclined to "be sold." Among the worst medical sins are to be reckoned those of commission. Physicians who indulge in such practices must sooner or later come to grief, and it would be better that both sides take warning before the patients discover for themselves that their welfare is being bartered and that they are likely to fall into the hands of incompetents willing to overcharge in order to pay exorbitant dividends.—*Medical Record*, December 3.

PRACTICAL NOTES.

Local Treatment of Neuralgia.—Apply, two or three times a day, the following mixture on cotton: Menthol and guiacol, āā 1 gm., alcohol. absol. 18 gm.—*Vienna klin. Rund.*, November 13.

Motet's Operation for Ptosis.—Ptosis can be corrected by utilizing the synergy between the levator palpebræ and the muscles of the globe. Motet cuts a strip in the rectus superior and pulls it through a buttonhole in the tarsal cartilage to suture it to the upper lid.—*Gaz. Méd. de Paris*, November 12.

Scarlet Fever After Laparotomy.—A. Sippel reports a case of scarlet fever appearing in a virgin three days after laparotomy for an ovarial tumor; evidently the infection had occurred previous to the operation. He concludes from the favorable course and lack of complications in this case that it is unnecessary to defer an important operation, herniotomy for instance, in a scarlet fever patient, and that a child could be delivered

without being infected in simple scarlet fever.—*Munich Med. Woch.*, November 15.

Formaldehyde Disinfection.—Fairbanks states in the *Cbl. f. Bacteriologie* that raising the temperature of the room to be disinfected to 70 to 73 degrees shortens the time necessary for the disinfection. He used a Schering apparatus and found that bacteria were killed in eight hours, instead of requiring over twenty-four as previously.

Lupus Erythematodes.—Hebra reports remarkable success in six cases of this affection treated simply with alcohol applied on cotton, with which the surface is dabbed forty to fifty times. In each case the cure was prompt and complete, in spite of the chronic character of the lupus. Kohn has also applied it with success. Kaposi observed that the alcohol may have been the effective factor in the old spiritus sapon. kalin. Soap must be avoided while the alcohol is being used.—*Vienna klin. Woch.*, November 17.

Sign of Sclerosis of the Aorta.—Cherchevsky calls attention to a sign that will reveal sclerosis of the cross of the aorta even in its incipient stages. He has established that the arch of the aorta in normal persons has a variable dimension, as can be determined by tapping the region of the aorta with the percussion hammer five to ten times. The aorta dilates, and its increased diameter can be readily detected with the percussion. But if there is sclerosis the aorta remains unchanged.—*Semaine Méd.*, No. 51.

Heteroplastics for Prolapsus of the Brain.—F. Franke relates (*Cbl. f. Chir.*, November 26) his success with a celluloid plate with projecting ends, which he inserted under the edges of the skull to close the defect after operating on an abscess behind the ear, through which the brain matter was protruding with such tension that no sutures would hold. The celluloid plate held the brain substance in check for several weeks, when it was removed. The prolapsus had disappeared and a bone-skin flap from the regio supra-mastoides was applied with immediate and permanent success.

Potassium Chlorate for Burns.—Lutaud's method of applying chlorate of potassium to burns, for which it is being highly recommended of late, is: Open the blisters and apply cataplasms every four hours until the epidermic flaps are entirely detached. A sheet of cotton moistened with a solution of potassium chlorate is then applied and oiled silk over it. To prevent sticking to the wound a little glycerin is added to the solution or the chlorate is incorporated with lard; or, better still, Declat's glyco-phenique is used instead of the glycerin. The sedative effect of phenic acid on burns is remarkable.—*Jour. de Méd. de Paris*, November 20.

Water Gymnastics.—Von Leyden and Goldscheider emphasize the importance of the effects attained in cases of atrophy of the lower extremities, painful joints, etc., by a series of gymnastic exercises performed under water, which should be at a temperature of 28 to 32 degrees R. The sensation of weight and resistance is removed and the buoyancy imparts both a physiologic and psychic stimulus of great value. An attendant holds the trunk still, if necessary. If able to stand, the exercises are best performed in an erect position, the body supported.—*Deutsche Med. Woch.*, November 17.

Vomiting of Pregnancy.—Barth observes that uncontrollable vomiting in pregnancy depends upon two factors in varying proportions; a nervous influence emanating from the uterus and reflected upon the nerves of the stomach, and an autointoxication from defective function of the liver. The clinician should carefully inform himself in regard to the pathologic past of the patient as soon as possible, as temporizing is criminal when there is an evident hepatic lesion. In such a case, if an exclusive milk diet and oxidating medicating do not control the vomiting, then there is but one thing to be done, i. e., arrest the pregnancy and at once, before the autointoxication aggravated by the digestive disturbances and inanition has time to produce irremediable disorders in the organism.—*Semaine Méd.*, November 16.

Euphorbium in Surgical Tuberculosis.—Pénières announced a year ago that he had been very successful in curing local tuberculous processes with an emulsion of the gum resin, euphorbium. He now states that experience and time have only confirmed the great value of this simple treatment, particularly in monoganglionary adenitis, which is usually cured with two or three injections. One striking case is a girl of 14 years, who had an enormous poliadenitis on the right side of the neck, almost inoperable. The left side had been similarly affected, but had been operated several times and was seamed with scars. The tumor compressed the ear, causing deafness; its surface was covered with suppurating fistulous openings, and even respiration was impeded, but the case was entirely cured in a few months with a dozen injections of the euphorbium, made very irregularly. The tumors and deafness disappeared, and the skin became white and supple.—*Gaz. Méd. de Paris*, November 12.

Gastrotomy.—Urban reports a case of carcinomatous degenerated stomach entirely removed; smooth recovery; no disturbance in digestion; woman of 35 years (*Munich Med. Woch.*, November 22). Perier recently presented before the Paris Academy of Medicine a patient operated on a year before for a neoplasm requiring excision of the middle portion of the stomach and of the transverse mesocolon. He then united the two culs-de-sac left after this annular excision, with a double suture reinforced by a lining made of the omentum. She has gained 13 kilos in weight, appetite is good and digestion easy. Constipation is controlled with cascarin and injections daily. He emphasized the necessity of pushing down and away from the field of operation the fecal matters in the colon. By pushing the contents of the distended colon down to the sigmoid flexure, he was able in the course of three days, with numerous injections and suppositories, to secure a copious passage, after which the patient rapidly improved, although her condition had been quite precarious before. He ascribes to the ignorance of this necessity his failure in another case which promised equally well. He concludes his communication with the advice to push the contents of the intestines during a laparotomy well down into the rectum, when the accumulations indicate any difficulty of evacuation.—*Bulletin*, November 15.

Sulphuric Acid in Infections.—Noskowski states that sulphuric acid is extremely effective in arresting infections, on account of its property of absorbing oxygen. Bacteria in general are unable to live without oxygen, and where it is lacking they procure it by decomposing organic substances, if possible; if not, they die. Sulphuric acid also obtains it from the same substances as the bacteria, and introduced into the organism it absorbs the oxygen, which stimulates the hematosis, respiration, circulation and the organic exchanges, thus depriving the bacteria of the oxygen they require and also stimulating the organism to repel their invasion. He finds that animals can take 25 milligrams of sulphuric acid per kilogram without injury, in a subcutaneous injection. His method with man is small rectal injections of 10 centigrams of nascent sulphuric acid made by dissolving in water a sulphid and an organic acid, fractioning the dose as desired. Infants can take 10 milligrams every two hours, increasing gradually to the age of 8, when the dose can be 10 centigrams, as for an adult. One to six of these injections will certainly cure intestinal infections in young and old. Three to twelve injections are necessary in typhoid fever, eruptive fevers and influenza. Even in advanced tuberculosis they will prolong life many years, and in fresh cases have resulted in a few cures. He has it inhaled in a gaseous form in pulmonary affections.

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SATURDAY, DECEMBER 17, 1898.

STUDIES OF THE COLON BACILLUS.—COLON INFECTION OF THE URINARY TRACT.

The colon bacillus has been found in connection with a large number of diseases, but whether it can be stated to be the real cause of many of these processes is still an undecided question. There are as yet great difficulties in the way of accurate identification and classification of bacteria, as witness the so long confused relations between the colon and typhoid bacilli. Only recently has it been possible, by means of PFEIFFER'S phenomenon (Widal's reaction), to show that there is a fundamental difference between these two organisms.

A large number of the investigations bearing on the colon bacillus are of little value, because of the incomplete descriptions of the forms of growth and other biologic characteristics of the bacilli studied. RAHLFF[1] attempts to draw a clear picture of the typic colon bacillus and its biology. For this purpose he cultivated sixty-two different kinds of this microbe, partly from the feces, partly from pathologic products.

He describes the typic colon bacillus as follows: It is decolorized by GRAM'S method; does not liquefy gelatin; it decomposes lactose and glucose, and grows quite luxuriously on different kinds of potato. It does not decompose urea, but among the author's sixty-two varieties there were two which decomposed urea, one of these coming from the feces, the other from urine containing pus. There are numerous microbes that resemble the colon bacillus, but differ in one or more points from the typic organism. Consequently, all investigations concerning this bacillus or allied forms should definitely specify the morphologic and biologic characteristics.

The forms which RAHLFF has studied were obtained partly from normal feces, partly from pus in perforation peritonitis, and also from purulent urine. In many cases one variety was obtained from the normal excretions, and another from the pathologic product. The virulence was determined in a large number of cases by intraperitoneal injections into guinea-pigs. It was found that the colon bacilli from the normal feces, as a general rule possessed the same nearly constant degree of virulence, whereas the bacilli that were obtained from the urine varied very much, some being more virulent, others less virulent than those isolated from the feces of the same individual.

Among the large number of disease-processes with which the colon bacillus is more or less closely connected, the author has selected for more extensive study, infectious processes in the urinary tract and perforative peritonitis. Previous investigations in regard to the infections of the urinary tract are undoubtedly vitiated in many instances by two distinct sources of error: the first one is, that urinary, especially tube, cultures from fluids and organs containing colon bacilli and other bacteria very often yield but one growth, namely of the colon bacilli, which have the power of preventing by overcrowding the growth of other bacteria. In such cases, microscopic examinations, careful study of smears, and various technic aids must be employed in order to demonstrate the possible presence of microbes which the cultures do not bring to light. In these cases the primary cultures should alway be made by the plate method. Another source of error is to be watched for in examinations in regard to the presence of colon bacilli in dead bodies. It may be regarded as fairly well established, that the colon bacillus may migrate in large quantities into parenchymatous organs, not only after death but also during the agony, and that when found outside the digestive tract under such circumstances the colon bacillus has undoubtedly incorrectly been regarded as the cause of the perhaps fatal illness.

In agreement with the claims of ROVSING, RAHLFF insists that the colon infection of the urinary tract is essentially a benign process. The colon bacillus but rarely attacks the bladder; the kidney and the pelvis are however, often involved, being the seat of the primary infection, which may descend along the ureter. The colon infection of the kidney and renal pelvis is described clinically as of rather sudden beginning, with fever and chills; at times severe and persistent, at other times less well marked, lumbar pains; and a constant diarrhea. Often the urine is burning: there may be vesical tenesmus, and the urine, which is acid, will be found to contain more or less pus aud numerous bacteria. Objectively, there is usually a marked tenderness in the region of the

[1] Studier over colibacillen, 1898.

kidneys. The attacks subside very generally without any treatment, except that the urine may continue opalescent and free of bacteria for a longer or shorter time, while the patients have otherwise apparently regained perfect health. The author believes that the more severe cases depend upon a gastro-intestinal disturbance, which is shown by the very nearly constant diarrhea, and that from the intestinal tract the colon bacilli pass into the blood and become localized in the kidney and the pelvis. In many cases a pre-existing nephrolithiasis seems to favor this localization. It is very probable that the local renal infection occurs during the process of elimination through the kidneys.

OYSTERS AND DISEASE GERMS.

There are probably few persons of any taste who doubt the wholesomeness of oysters, though the question has been raised and extensively discussed in times past. In the light of modern germ theories it again comes to the front, and the possibility of their conveying disease has to be seriously considered. Three or four years ago an epidemic of typhoid among the students of an eastern college was credited to the ingestion of oysters that had been taken from sewage contaminated water, and some similar experiences in Great Britain led to the appointment of a committee of the British Association for the Advancement of Science to investigate the matter and report results. This committee, consisting of Professors HERDMAN (chairman), BOYCE and SHERRINGTON, Dr. C. A. KOHN and Mr. G. C. BOURNE, has this year made the third and final report, the substance of which is given in *Science* of November 27.

In a previous report the committee had already called attention to the presence of organisms in oysters closely resembling the bacillus coli communis, and also of others varying somewhat in their reaction from this species, and strongly suggestive of Eberth's bacillus, and a comprehensive Local Government Board Report of Dr. KLEIN had likewise done the same. Their later researches, which were not solely confined to oysters, but included other edible mollusks, mussels, periwinkles, whelks, etc., as well, are only confirmatory of these earlier ones, while their additional thoroughness and completer methods give them a decidedly greater value. In nineteen samples of oysters from various sources there was found in nine a bacillus closely resembling B. coli—in some cases almost a pure culture was obtained with characteristic odor. The reactions differed; in one group they were typic, acid, coagulating milk, giving out indol and gas, and the growth on potato was luxuriant. In another group, however, there was a very actively motile bacillus that did not coagulate milk, gave out indol and gas bubbles only occasionally, and had in three cases an alkaline and in two a slightly acid reaction. Serum tests were negative, and from all the facts the committee concluded that it could hardly be identified with the true typhoid bacillus.

In the earlier reports of the two previous years the committee had given the results of experimental infection from oysters, and in the present one they recommend, in view of the existence and frequency of microbes of the colon type in these as well as in other species of shellfish, that steps be taken, either by Government inspection or by co-operation amongst the dealers, to remove any possible suspicion of sewage contamination. It has been proven sufficiently that oysters can imbibe sewage, and the source of the contamination being proved, the danger is a real one. They recommend the formation of an association of oyster dealers who, for the credit and safety of the trade, will look after the sanitary requirements and provide for periodic examination of the oyster beds, with special reference to their needs. They seem to think that there is little danger in oysters from pure sea water, at least so far as regards these disease germs; the peril of sewage infection lies therefore, mainly in the fattening beds, which are apt to be in fresh water or tidal creeks, and in oysters taken from estuaries and rivers that receive the sewage of thickly populated territories.

There does not appear to be any evidence given, at least in this final report, that sewage necessarily affects the mollusk itself—it may be that it thrives on it—but it none the less may be a dangerous source of infection to its human consumers. The committee report, however, touches upon another possible cause of unwholesomeness in these articles of diet or luxury, that is due to a disease of the oyster itself. A green coloration of oysters has long been observed to occasionally occur, and has, in times past, been attributed to copper and occasionally supposed to render the oyster unfit for consumption. There has been, however, no really authoritative utterance given out, and green oysters have often enough been eaten without serious consequences. The committee investigated this phase of the oyster question also, and find that while a green tinge is not always an indication of the unfitness of the mollusk for human food, it is in some cases associated with a diseased condition, leucocytosis, and that such are not to be recommended. It would appear that there is room for further study on this subject, especially in this country, for their researches were apparently confined to European oysters or to American oysters transplanted to European beds. The report does not aid us over here to decide what green tinted oysters are wholesome and what are not; we are left in doubt as to the whole class.

It would be well if those States in which the oyster fishery is an important industry could utilize the suggestions of this report in some legislative act that would tend to secure the public against possible dangers from contamination of this very important and

popular form of sea food. Oyster cultivation is or should be a very important local industry along our coast, but it ought to be under regulation. If oysters fatten in sewage infected streams, this ought not to be permitted to be a temptation to ignorant or unscrupulous breeders, and local government regulations should control the choice of the beds as well as their working. There is an opening for the labors of a State bacteriologist in each and all of the oyster-producing States, sending out as they do a food product so popular and so generally eaten raw or imperfectly cooked and thus especially liable to convey any existing germs of disease.

AUTO-INTOXICATION AND NEURASTHENIA.

The relation of uric acid to neurasthenia has been long ago suggested, but has not entered definitely into the pathology of the disorder. Ordinarily we are or have been inclined to accept the action of the fatigue and exhaustion of the nerve-cell as the principal factor in its production without specially looking further for the influence of morbid metabolism in its production. Nevertheless, in these days, when auto-intoxication is invoked so often as a cause of disease, neurasthenia could not well be overlooked, and certain French authorities, notably among them VIGOUROUX, have maintained that neurasthenia and the arthritic diathesis are closely connected, if not merely differing manifestations of the same general disorders of oxidation and tissue change. In this country we have recognized a disorder the majority of the symptoms of which are essentially neurasthenic—lithemia, as the common American manifestation of the gouty constitutional vice—thus admitting, to a certain extent at least, that auto-intoxication may give rise to these characteristic symptoms. The presence of uric acid in excess in the urine of neurasthenics has long been noted, and the relations of the gouty diathesis to the condition have been admitted by some neurologists who, like DERCUM, for example, are inclined to admit a toxic factor in its production.

An important addition to the literature of the subject is contributed by BECHTEREW, the well-known Russian investigator of the physiology and pathology of the nervous system, in the *Neurologisches Centralblatt* of November 15 last, under the title of "Ueber Störung des Stoffwechesels bei Neurasthenie" (The Disorders of Metabolism in Neurasthenia). He has had for a considerable period, examinations and analyses of the urine of neurasthenic patients carried on in POEHL'S laboratory, and found that neurasthenia, sometimes at least, appeared to depend upon irregularities of oxidation. In general, and especially in the severer types of the disorder, there was a more or less marked decrease of urea and an increase of uric acid. The proportion of the general nitrogen in the urine to that in the urea—which, according to POEHL, is the coefficient of the oxidation energy and the expression of the tissue respiration—indicated a constant and notable decrease of nitrogen oxidation. The proportion of uric acid to phosphoric acid, in the form of its di-natrium salts, showed an increased cleavage of uric acid and led to the conclusion of the presence of a more or less pronounced uric acid diathesis.

In the severer cases of neurasthenia BECHTEREW also found that the proportion of general nitrogen to phosphoric acid, which according to SULZER indicates the decomposition energy of nerve tissue, seemed to be increased, and the same was true to some extent as to the proportion of general phosphoric to the amount of glycero-phosphoric acid, which according to LEPIN, indicates lecithin decomposition. In many cases also the quantitative ratio of sulphuric acid to the aromatic sulphuric acids that serves as the index of intestinal putrefaction appeared more or less markedly increased.

From these results, BECHTEREW believes that neurasthenia is associated with irregularities of oxidation of nitrogenous substances in the organism and that it must therefore be classed with the other disorders due to and associated with disordered general metabolism. The chief cause is, he thinks, an intestinal auto-intoxication, a more reasonable theory than that of gastric dilatation suggested by VIGOUROUX. He does not, however, exclude other predisposing causes of neurasthenia, such as mental strain, etc., which may have their influence in the causation of the intestinal disorder. There is a wide field for research yet in the action of the fatigue poisons, especially in the nervous system, and this may carry us back to still more remote factors in the etiology of neurasthenia. When once intestinal putrefactive poisons are absorbed, however, there may be ample reason for even severer disturbances of the nervous system; the part they play in the causation of some forms of insanity is probably an important one.

There is something in the suggestion thrown out by BECHTEREW, that mental overwork and sedentary habits may divert the proper blood-supply of the intestines to some extent and thus embarrass their functions and lead to stasis and absorption of toxic material, and also that shock and other occasional causes of nervous asthenia may act through the vasomotor system. Whether we are justified or not in accepting his conclusions, his facts are valuable additions to the sum of our knowledge as to the conditions associated with neurasthenia, and their suggestions are perhaps still more valuable. They throw additional light on the relation existing between arthritism and neurasthenia, one that must have suggested itself many times to any one with a practical acquaintance with these conditions and one which, though disbelieved in by some authorities, appears to be more and more forcing itself upon our attention. Whether we are to consider them identical in their etiology and pathology is one thing; the recognition of their intimate relation is perhaps another.

ABERRANT FORMS OF CHRONIC LEAD-POISONING.

It has been well said by one of the great teachers in medicine that when a patient comes before the physician with obscure symptoms in connection with the nervous system, indicating organic disease, two conditions should always be thought of as the possible exciting cause: syphilis, and chronic metallic poisoning in some one of its forms, usually in the form of lead. This dictum arose from the fact that syphilis is competent to produce almost any lesion in the body, and that lead often manifests its presence by conditions which are so unusual that its presence as an exciting cause is not suspected. It frequently gains access to the body in a manner which does not raise suspicion, as for example, in the well-known epidemics of plumbism that have arisen from the use of previously pure water delivered through lead pipes, the attacks of "dry cholera" so-called which have followed the use of flour ground in mills in which the stones had been "filled" with lead, and again, as in two cases which have come under our notice, it has gained access to the body owing to the fact that seamstresses make it a habit to chew small particles of thread which they bite off when threading their needles which thread when, it was made of silk, was sometimes loaded with lead to increase its weight. By this habit of chewing leaded threads enough of the poison was taken into the body to produce saturnismus.

It is also becoming a well-known fact that nothing is more easy than to make an erroneous diagnosis of locomotor ataxia when in reality the condition is one of plumbic peripheral neuritis, or pseudo-tabes, and these difficulties in diagnosis are increased not only by the facts that we have mentioned, but by the additional discovery, which is becoming more and more clear each year, that the manifestations of chronic lead-poisoning may not appear for a long time after the patient has been exposed to the poison. Thus we have recently seen a case in which the symptoms of lead-poisoning did not come on for six months after a painter ceased working at his trade, and several cases of this character have been reported recently in the *Birmingham Medical Review*, by KAUFFMANN, in which the patients presented symptoms of lead-poisoning a number of months after being exposed to the poison, in one instance after almost two years. An analysis of the urine in these cases showed the presence of lead, proving that the diagnosis of the cause of the symptoms was correct.

The manner in which this curious delay occurs is not far to seek when we study the question of the elimination of lead. It is a substance which is eliminated from the body very slowly indeed and, like other metals, has a tendency to accumulate in the tissues, where it forms a fairly stable combination with the protoplasm, and probably also with uric acid, as is illustrated in the development of what has been called "plumbic gout." Further than this, almost every tissue of the body seems to be capable of containing it, though the muscles and blood contain less than any other part. In many instances it is evident that these delayed symptoms arise from the gradual deposit of lead in the tissues during the period in which the patient is in a condition of good health and nutrition, and that later on, when by reason of illness, bad food, or unsanitary surroundings, a portion of the protoplasm of the body is utilized for vital processes, the lead which has been deposited is picked up once more by the blood and lymph streams and distributed to the tissues, where it produces its effects. This matter is not only of importance from a medical point of view, but also because interesting medico-legal questions arise in connection with it. Thus, for example, a suit might be brought upon the part of a person who had been unwittingly exposed to lead with the development of symptoms a number of months afterward, and the defense might claim that it was impossible for so long a period to elapse between the exposure and the development of plumbic symptoms. The cases that we have cited show, however, that this would be competent defense.

BOOK NOTICES.

Transactions of Iowa State Medical Society. Vol. v. Cloth. Illustrated. Pp. 425. Burlington: Keehn-Harper Mfg. Co. 1898.

Besides the minutes of the forty-seventh annual session of this Society, the volume contains forty-eight papers and addresses presented before the Society, with obituary notices and portraits of Drs. Elizabeth Hess, Henry Clay Bulis, Walter Oscar Richards, R. H. Moffit and W. A. Todd. There is also a list of the permanent members of the Society, the Iowa delegation to the Denver meeting of the AMERICAN MEDICAL ASSOCIATION, a list of exhibitors and auxiliary medical societies.

Annual Report of Health Officer, Port of New York. Paper. Illustrated. Pp. 100. New York and Albany: Wynkoop Hollenbeck Crawford Co. 1898.

This, the report of Health Officer A. H. Doty, is that for the year 1897, transmitted to the Legislature March 30, 1898. Some of the topics considered are: "Inspection of Passengers and Crews of Incoming Foreign Vessels;" "Disinfection by Steam;" "Formaldehyde as a Disinfectant;" "Formaldehyde with Special Reference to its Chemistry in Disinfection;" "A Preliminary Note on the Investigation of the Antitoxin of the Bubonic Plague," and "Notes on a Yellow Fever Prophylactic Fluid."

Transactions of Pathological Society of Philadelphia. Edited by WILLIAM S. CARTER, M.D. Vol. xvii. Paper. Illustrated. Pp. 493. Philadelphia: Wm. J. Dornan. 1898.

This volume contains the report of the Society's proceedings from October, 1895, to June, 1897, and contains lists of former presidents, officers, committees and members. The contents are classified under the several heads: Diseases of the osseous system, of the digestive tract, of the cardiovascular and hemapoietic systems, of the respiratory tract, of the genito-urinary system, of the nervous system, and diseases of the ductless glands. There is also a chapter on miscellaneous matters and one on technic.

Transactions of Medical Society of West Virginia. Paper. Illustrated. Pp. 235. Wheeling: W. J. Johnston.

This volume contains the proceedings of the thirty-first annual session of this society, held at Martinsburg, W. Va.,

May 18-20, 1898. There is also a "Report on New Remedies," and papers on: "Diabetes Insipidus, with Cases;" "Exophthalmic Goiter;" "Fracture of the Patella; Treatment by Mediate Ligation," and "A Brief Review of Theo. Durrant's Case."

Journal of Proceedings of the National Pure Food and Drug Congress. Paper. Pp. 54. Washington, D. C. 1898.

These proceedings are for the Congress held in Washington, D. C., March 2-5, 1898, and comprise the many addresses and papers presented at this session.

PUBLIC HEALTH.

Book-Holder for Schools.—The Giessen High School provides each pupil with a simple, cheap, adjustable little book-holder to stand on the desk and hold the book open at the proper angle, made on the principle of a folding photograph case.—*Deutsche Med. Woch.*, November 17.

Health of Indiana.—The reports for November indicate an increase over the preceding month, in area of prevalence, of tonsillitis, bronchitis, rheumatism, pneumonia, scarlet fever, pleuritis, inflammation of bowels and erysipelas. Decrease is indicated in intermittent fever, influenza, diarrhea and dysentery. Typhoid fever and diphtheria remained unchanged.

Intoxication from Meat.—Salchow reports five cases of intoxication following the ingestion of some freshly purchased corned meat. In two cases vomiting was the only symptom, but the three others, children, presented every symptom of severe poisoning with atropin or a similar alkaloid. All recovered in ten days.—*Deutsche Med. Woch.*, November 17.

Army and Navy Mortality in Life Insurance.—The mortality in the British army and navy, under modern war conditions, has been analyzed by the secretary of a large life insurance company. He found, to begin with, that the selection of men for entrance into the navy is so severe that in the first year the standard of health is considerably higher than among a body of insured lives in the first year of insurance. He concludes that 6.1 per 1000 is the extra mortality rate which, for life insurance purposes, may be considered as incident to service in the navy, and that 9.9 per 1000 must similarly be rated as the extra hazard for army service. He figures up these extra rates thus, taking as the observed period the ten years, 1886-95. In the army the extra rate among active lives in the whole force was 4.7 per 1000 while in the navy it was only 1.8 per 1000. But the risk of death in active war service was 3.8 per 1000 in both army and navy, from the standpoint of life insurance. He quotes from Smee to the effect that "after carefully weighing the available data, and giving consideration to the conditions of modern warfare, and the present strength and efficiency of European armies and navies, and also to the diminished mortality in respect of climatic risk, we propose, for the purposes of the report, to estimate that the British army and navy will be engaged once in forty years in a national war, involving the calling out in active military service for a term not exceeding three years of two-thirds of the whole force of officers and men in both branches of the service"; and Lord Rosebery, speaking before an association of commercial bodies some weeks ago, reminded his hearers that the country is in an epoch of danger, not having been engaged in a European war in forty years past. Among British naval stations, the Mediterranean has the highest death rate, 10.6; the North American and West Indies station has the lowest, 5.1; in the East Indies station the extra mortality rate for insurance purposes was 7.0 in the five years, 1886-90, and 5.8 in 1891-95; the average for all stations is 7. The insanitary condition of the Mediterranean station is chargeable to filthy towns and harbors, but this is improving. The extra rate in the army has also declined from 10.6 in 1886 to 5.5 in 1896.—*The Independent*, November 24.

Obstacles to Sanitary Service.—In the October issue of *Public Health* (London), a curious instance is related of unrequited faithfulness on the part of a health officer, located in the west of England, who ran counter to the wishes of a local politician, who was chairman of the district committee. In the family of the latter a child was found to be ill of scarlet fever. When the health official began to inquire into the origin of the infection the medical officer found that another child in the house had been ill in bed for a fortnight, and was desquamating freely. The latter case had not been notified, which fact was reported to the Council. At the same meeting, the medical officer had to report that the child of a neighbor had been sent to school within a week of being taken ill with the same disease, and that this case also had not been notified. When the report came to be considered, a single proposition was made to prosecute in both cases under the Notification Act. According to the newspaper report, the chairman, one of the offenders, did not leave the chair, but remarked that he had a complete answer to the charge. It appears from the report that on a vote being taken no one opposed the proposal, nevertheless, the chairman, at a subsequent stage of the proceedings, declared that the proposal had been lost. On this declaration being disputed, a second vote was, by leave of the meeting, taken, and the voting was then equal, whereupon the chairman gave his casting vote for quashing proceedings against others as well as himself, and placing the health official at a signal disadvantage as to his future official course. It is not easy to think that such a disgraceful bit of jobbery can be matched, and all sanitarians would be pleased to learn that the superior governmental authorities have taken the case into consideration. A question arises whether the chairman has not laid himself open to proceedings for a much higher penalty than that provided for under the Notification Act. So far as the district in question is concerned, legal proceedings against other offenders must be an impossibility. The unfortunate medical officer of health had the courage to report to the council the neglect of its chairman to notify the first case in the family, but being in private practice, has probably very materially injured his patronage.

An Efficient Woman's Health Society.—The last annual report of Dr. J. Niven, health officer of Manchester, England, says that no report on the sanitary work of the Manchester Corporation would be complete which did not include some reference to the work done by the Ladies' Health Society in the poorer parts of the city. This organization concerns itself partly with social and partly with sanitary matters. Established as early as 1862, it has of late appeared to grow in strength and influence. That portion of the work in which the society comes in relation with the health office is carried out by health visitors, who are employed, guided, and assisted by the ladies who form the society. The female health visitors live in their respective districts, and are at the constant call of the people for help and advice in cases of emergency. They visit the houses systematically—six hours a day, except Saturday—and a report of their work is received each morning by the health office. They supply lime in suitable cases for purposes of lime washing, and lend out Turk's head and flat brushes for use. One visitor alone during the last twelve months has had fifty bedrooms, and numerous sculleries, cellars, yards, and closets thoroughly limewashed by the tenants. They supply carbolic soap to poor people at 2d. a pound, or 5d. a bar of three pounds, which is used in the cleaning of their houses, giving away a little at their discretion. In those cases where soap is supplied free, the health visitor sees that it is applied to the intended purpose of cleansing the house. The cleaning of floors, burning of refuse, washing of clothes, and other points of the same kind, are matters of great moment to health, in which the health visitors give much useful instruction. The

visitors carry with them disinfecting powder, explaining its use, and leaving it where necessary; at the same time they make a record of any dangerous condition discovered. An important part of their work is that which is devoted to the interests of children. They call attention to bad clothing and neglected conditions, and do what they can to remedy what is wrong—sometimes even dressing the children in case of neglect, and giving clothing in suitable cases of want. They give systematic instruction on infant-feeding. They also instruct the mothers, in a precise manner, how to keep the children's heads clean, and see that it is actually done. They fulfil an important part in the distribution, and oral explanation of printed instructions on feeding children, and on the steps which a householder must take to keep his family in good health. In the last annual report of the health officer the results of an inquiry which they made for him on infant feeding is given. It is largely through them that a knowledge of the contents of handbills on sanitary matters becomes known to the poorest class. They also visit, on behalf of the medical officer of health, the homes at which deaths have occurred, except from any infectious disease, and fill up the card supplied to them in each case. They also do other work of a very useful nature, such as lending out maternity-bags to poor people, and, in cases of general illness, sheets, night-dresses, pillow-cases, etc. In summer the health visitors recommend suitable children to the Children's Holiday Fund, and see to the cleanliness of the children before they go for the holiday. In 1890 the Corporation paid the wages of six of these female health visitors; they now pay the wages of nine.—"Annual Report," 1897.

A Model Water-Plant Village.—The *Sanitary Record*, London, describes a village built up for the accommodation of the workmen and their families, who are employed upon the new waterworks of Birmingham. That city has entered upon an expensive undertaking in order to protect itself against the commercial and sanitary embarrassments of water-scares, having secured vast water-bearing territory in Wales for the purpose of having ample reservoirs. The "model village of Birmingham," as it is called, has been built for those employed upon these works, and the details are worthy of note by all interested in the carrying out of great works. The houses are built of wood, and the village is approached by a suspension bridge. The advantage of this is that "strangers" have to state their business before they can find a way into the place. If they are seeking work a night must be spent in the corporation "doss-house" on the opposite side of the bridge. Here they must strip and have a bath; during the night their clothes are disinfected, and in the morning the applicant has to appear before the resident medical officer. If everything is satisfactory a permit is given to cross over, and by this means a clean bill of health is maintained. The village itself, to quote from the article we have referred to, is laid out in streets, the house blocks being specially designed, as the case may be, for the accommodation of single families or for the housing of a limited number of unmarried men lodging with a married couple. In the latter case each lodger has his own separate cubicle and locker, and enjoys the use of a living room in common with the other inmates of the house. The villagers number some 1500 navvies and others employed on the work, with their wives and families. Baths and wash-houses have also been built, a large public assembly-room, a canteen and general store, a postoffice and a police station. A medical officer and a staff of trained nurses are associated with the infirmary hospital down near the work, and the isolation fever hospital up on the hillside, away from the abodes of men; and a chaplain and missioner look after the principal well-being of the settlement. This small town is only a temporary arrangement; that is, when the work is finished it will be removed, yet the sanitary provision made is as complete as for any permanent town. A constant water-supply is laid to all the houses, and fire hydrants are placed in the streets. These derive their supply from a temporary reservoir in the hills behind. The main drainage and sewerage works are complete in every particular, and the flushing of the street sewers is carried out on "an original and unique plan," calculated, we are told, to ensure the absolute cleanliness of the system from end to end. Advantage is taken of the natural fall of the river, the engineers having laid the main pipe through the village parallel to the river, and continued it up stream till it taps the river-flow at a point above the highest house in the settlement. Thus a constant stream of pure river water is day and night scouring through the full length of the drainage system, and discharging into the settling tanks down the valley below the village. Thence the clarified sewage, very dilute, passes back into the Elau. In addition to all these excellent arrangements, a line of rails has been laid from the village to the works. After the train has taken the men to their ground it returns to the village and conveys the children of the colony to a school, three miles away.

Decline of Vaccination in England.—The antivaccinationists are commonly regarded as a "feeble folk," not a most irrational body, peculiar to or but little known outside of the Anglo-Saxon race. They may be feeble intellectually or logically, from the point of view of the medical majority, but they have been powerful enough politically to increase the numbers of the unfortunates who are susceptible to variola, as well at to stifle the best instincts of the British law-givers. According to the twenty-fourth annual statement of the officials appointed under the act requiring compulsion in England regarding vaccination of infants, passed in 1871, we may believe that in 1872 the proportion of unvaccinated persons in London was 8.8; in the rest of England, 4.5. In 1875 the proportion was as low in England generally as 3.8, but since that time the number has increased until, in 1895, the figure for England and Wales was as high as 20.5. Of the 921,512 births returned as registered during the year 1895, deduction was first made of the deaths that took place before vaccination; of the survivors, 816,682, there were registered 76.5 per cent. as successfully vaccinated, 0.4 per cent. as either insusceptible or as having had smallpox and, including 1.7 per cent. as under medical certificate of postponement, and 23.1 per cent. as at that time not finally accounted for as regards vaccination. The proportion of cases not finally accounted for in England and Wales for 1895 is 20.5 per cent.; in the metropolitan returns for 1895, 24.9 per cent.; in the provincial returns 19.8. It is thought by the editor of the *Scalpel* in the issue for October, that a want of care has caused the unpopularity, if it really exists, among the poor of England concerning the best proven remedy for that terrible disease—smallpox—and only by a greater degree of care on the part of every practitioner of the holy art of vaccination can the medical profession go forward in the line of life saving pointed out by Jenner. So far as lymph is concerned the vaccinator is enabled to say that in the new glycerinated bovine lymph, it has the best that the ages have yet produced, probably better than that which Jenner himself had to operate with. A very plausible objection to vaccination has been removed by the introduction of this relatively aseptic material. A common-sense view of the question appears to be that it is distinctly unfair to the better-educated majority that it should through the faddist opinions of a small and ignorant majority, be exposed to the dangers of a pestilence like smallpox, and it is probable that if instead of abandoning compulsory vaccination, those in authority in England had firmly stood out against the agitation and had resolved to enforce the law strictly, the movement against it would have died a natural death. At any rate, it seems safe to make the assertion that this country and other nations who have become convinced by experience that vaccination is a safeguard against the ravages

of smallpox, will be chary of following England's lead and of trying what Lord Lister calls "a tremendous experiment." It is interesting to note that Scotland and Ireland refuse to have the new law put into operation within their borders, and that the English Government *does not intend to alter the existing regulations in regard to vaccination in India*, thus plainly showing that in the case of England it is taking steps at variance with its better judgment, as regards its own population; thus giving to its latest legislation upon the subject the color and form of a cowardly compromise and an insincere homage to a sanitary science, falsely so-called.

SOCIETY NEWS.

Medico-Chirurgical Society, Louisville.—The regular meeting of this society was held at Seelbach's Hotel, December 2, as the guest of Dr. L. S. McMurtry, who read a paper on "Endometritis."

Nelson County (Ky.) Medical Society.—Among the papers to be read at the regular meeting of this society are: "The Nausea and Vomiting of Pregnancy and Its Management," by J. B. R. Cooper, Samuels; "Chronic Glandular Enlargement and Its Treatment, by S. B. Crume, Bloomfield; "Some Difficulties in the Catheterization of the Male Urethra, by A. G. Blincoe, Bardstown; "Puerperal Eclampsia," by W. S. Napper, Boston. Dr. B. E. Gore of Bardstown, is president, Dr. J. W. Hill Jr. of Boston, secretary.

International Congress of Gynecology and Obstetrics.—This Congress is to be held at Amsterdam, Aug. 8 to 12, 1899. The subjects appointed for discussion are: 1. "Surgical Treatment of Fibromyomata." 2. "The Relative Value of Antisepsis and Perfected Technique in the Present Results of Operative Gynecology." 3. "Influence of the Position on the Shape and Size of the Pelvis." 4. "Indications for Cæsarian Section." The official languages will be English, German, French and Italian. The addresses, translated into these languages, will be delivered to the members a month before the opening of the Congress.

Mildraugh Hill Medical Society.—The regular meeting of the society was held at Elizabethtown, Ky., December 8, with Dr. C. Z. Aud as president and Dr. E. Smith as secretary. The following papers were on the program: "Some Points in Obstetric Practice," by W. A. Ligon, Sonora; "Bright's Disease of the Kidney," by Stinson Lambert, Owensboro; "The Care of the Patient in Typhoid Fever," by B. M. Taylor, Greensburg; "Some Suggestions Concerning the Treatment of Typhoid Fever," by D. W. Gaddie, Hodgenville; "Brain Surgery," by W. C. Dugan, Louisville; "The Prevalence of Errors in Refraction," by A. G. Blincoe, Bardstown; "Diphtheria, with a Few Notes on Cases in Point," by D. C. Bowen, Nolin; "Lavage of the Stomach," by J. T. Green, Leitchfield; "Indigestion," by F. A. Barnett, Lebanon Junction.

Philadelphia Neurological Society.—At the last meeting, Dr. H. C. Wood exhibited two cases of myopathy, which seemed to have exerted itself on several members of the same family. The woman was of middle age, the muscles of arms seeming to be of normal rotundity, but with tender spots in certain areas. Areas of anesthesia also existed in various portions of the body, in both cases. In the man, the patellar reflexes were mostly exaggerated and ankle clonus was marked. In both cases the gait was awkward, almost causing the patient to fall. Dr. Wood thought that beside the usual lesions found in these cases, the posterior root zones were also involved. Dr. John K. Mitchell presented an interesting case, the diagnosis of which was obscure. A lad, about 17 years of age, gave a history of recurring attacks of paralysis with anesthesia, involving the extremities and entire body from the neck downward. During the attacks the muscles presented the reaction of degeneration. In certain attacks, premonitory systems frequently exhibited themselves, such as burning of the toes or other vague symptoms, and on the following morning total paralysis would come on. This paralysis would last for a day or two and gradually subside until not a trace of the disease remained. No positive diagnosis was made. Dr. Mellus of Johns Hopkins was present and read a paper on "The Motor Tracts in the Brain and Spinal Cord." The paper was based on experiments upon monkeys, in which portions of the brain had been removed from the so-called motor areas and the degeneration had been subsequently studied from the pathologic changes produced. The pathologic lesions were illustrated by lantern slides.

Southern Medical College Association.—This association met at Memphis, Tenn., December 5, prior to the meeting of the Southern Surgical and Gynecological Association, and after considerable discussion, it was decided to increase the course of study from three to four years. It is well known that the question of making the course four years instead of three has been before the association for two years, but it has been passed from time to time, in order that so radical a move might be fully discussed by all the faculties that are to be affected. Dr. Sinclair of Memphis presented the matter first at the meeting of the association in Atlanta, and since then from time to time it has been discussed frequently among each of the faculties in the association. At the meeting, only two of the thirteen colleges in the association failed to send representatives to the conference. On account of the change to the four year course, it was necessary to introduce a number of amendments to the Constitution and By-laws of the Association, but none of them was passed, because it is the rule that such amendments shall lie over for one year. This is for the purpose of giving the delegates an opportunity to present plans for whatever changes are contemplated in their respective faculties before final action is taken. The delegates present were: Drs. S. S. Crockett, of the University of Nashville; W. E. B. Davis, of the Birmingham Medical College; Christopher Thompkins. of the Virginia Medical College at Richmond; Ernest S. Lewis, of Tulane University, New Orleans: G. C. Savage, and Richard Douglas, of the Medical Department of Vanderbilt University of Nashville; T. H. Wood, of the University of Tennessee, at Nashville; Campbell of the Tennessee Medical College, at Knoxville; G. A. Ketchum, of the Alabama Medical College of Mobile, and A. G. Sinclair, of the Memphis Medical College. The University of the South was to have been represented by Dr. J. S. Cain of Nashville, but he sent a proxy in the person of Dr. Savage. The only two colleges in the association not represented were the Texas Medical College of Galveston and the Southern Medical College of Atlanta. The other absentee from the list of thirteen was the Bessemer Medical College of Bessemer, Ala., and it is no longer in existence.

Washington Medical Society.—At the regular weekly meeting of this society, held November 23, the death of Dr. C. M. Hammett was announced, and on motion, a committee of three was appointed by the president to draw suitable resolutions and report at the next weekly meeting.

Dr. D. S. Lamb presented a number of pathologic specimens, including hydrocephalus in a calf; a meningocele; an anencephalic fetus, and a specimen showing an arrest in the development in twins.

Dr. Philip S. Roye read the essay of the evening entitled, "Diagnosis of Tubercular Meningitis in Children." He said the disease was generally characterized by severe headache, vomiting, constipation, under three years, drowsiness, while in older children the mind remained clear, drowsiness appearing later. Contraction of head and tenderness in cervical region, and sometimes pain in chest—taches cerebrales and cry are not pathognomonic. As a rule the temperature is low, and the

pulse rapid; the temperature curve is irregular, differing materially from that in typhoid. The history of tubercular lesions elsewhere and tubercular parentage are important factors in diagnosis.

Dr. ACKER, in discussion, referred to two cases of tubercular meningitis which occurred in his practice in the Children's Hospital of this city, and which he had reported at the last meeting of the American Pediatric Society. The first case presented a tubercular history and was rachitic and suffered from retracted head, apathy, screaming, and had irregular pulse and temperature. The second case gave a history of adenitis and keratitis, and suffered from vomiting, apathy, irregular pulse and temperature and violent headache; both these cases recovered. He quoted Dr. Jacobi as saying that he knew of one case, which he thought to be tubercular meningitis, which recovered, but had known of no others; the doubt in diagnosis being the recovery. Dr. Jacobi says the diagnosis was based: 1, on the reaction to tuberculin; 2, examination of eyes, which would present characteristic appearance of choroid coat. Post-basic meningitis gives the same symptoms and lumbar puncture is the only means of diagnosis. In tubercular meningitis the diplococcus is found. He said that Dr. Northrup gives as diagnostic in infants: persistent vomiting, apathy, irregular pulse and respiration. The Doctor said he based the diagnosis on: previous history, persistent vomiting, local spasm (head drawn to side or back) and hereditary history. Low temperature is frequent. He said all these symptoms may be present in a case and the postmortem would sometimes fail to show the presence of tubercle.

Dr. LOCHBOEHLER referred to a case in his practice in which there were no spasm or rigidity. The temperature ranged between 100 and 106, but was normal for six days. The pulse was feeble and ranged from 140 upward.

Dr. S. S. ADAMS said that diagnosis depends on the stage of disease and age of the child. It may be confounded with typhoid, and the diagnosis is impossible in the earlier stage of irritation, but easy when irritation is at its height, because the temperature is then low. In all other diseases of advanced cerebral irritation, the temperature is high.

Dr. W. W. JOHNSTON mentioned a case in which lumbar puncture afforded great relief for twenty-four hours.

NECROLOGY.

ELLIS G. ARMSTRONG, M.D., Flora, Ind., November 23.—W. H. Baker, M.D., Lynchburg, Va., November 27.—Charles M. G. Brant, M.D., Omaha, Neb., November 25.—Edwin Carson, M.D., San Diego, Cal., November 24, aged 40 years.—George Coryell, M.D., Riverside, Ill., November 28, aged 89 years.—Albert J. Phillips, M.D., Baltimore, Md., November 24, aged 43 years.—Thomas W. Simmonds, M.D., Martinsville, Va., November 21, aged 38 years.—F. H. Van Valzan, M.D., Spring Mills, Pa., November 26, aged 60 years.

JAMES ALEXANDER MOORE, M.D., Bellevue, New York City, 1883, died at his home in Helena, Mont., November 29. He was a son of the late William Moore of St. Croix, Danish West Indies.

MISCELLANY.

Carcinoma Hardened With Formalin.—Bayer urges further tests with his method of destroying the vitality of a carcinoma with injections of formalin, transforming it into a dead, removable mass.—*Die Aerztl. Praxis.*

Peculiar Stainable Bodies in Syphilitic Products.—F. Winkler announces the discovery of regular spherical bodies in the various lesions of syphilis (gumma, condyloma, sclerosis, lymph-gland, etc., and even in the sperm of syphilitics) never found in any other disease. They have each an eccentric light spot. Unna has been studying them with him and both agree that they are neither blastomycetes, nor hyaline products, but a peculiar, hitherto undescribed product of syphilis, of strikingly regular structure, which deserve a special place in histopathology. They stain with thiodin or toluidin blue and decolor with formalin, or they can be stained with polychromic methylene blue and decolored with iodized alcohol or the glycerin-ether mixture. They are more prominent if the tissue is stained with orange or eosin.—*Munich Med. Woch.*, November 8.

Perforating Ulcer of the Mouth.—Letulle of Lille has reported an instance of this rare condition in a male, aged 50 years, an alleged alcoholic subject, who presented fairly well-marked symptoms of tabes. The teeth in the left half of the lower jaw were all wanting except the central incisor, those on the right side being healthy. In the upper jaw there were only three teeth left, and apart from the persisting teeth the alveolar border was atrophied; on the right side of the upper jaw there was a cavity involving the alveolar border and the hard palate, opening like a cone into the middle meatus of the nose. The mucous membrane lining it was pale, thickened, but not ulcerated; its sensibility was much impaired. The patient was not aware of this condition, but on being questioned he said that liquid food had for five months come through the right nostril. This lesion is rare; Baudet has collected eight cases chiefly on the subject of tabes. It may be unilateral or bilateral, but always occurs in the same situation. As to the explanation of the lesion, there are two views: that of Galippe, that it is the result of alveolar pyorrhea aggravated by tabes; and that of Baudet, that it is an atrophic tabetic lesion due to the fifth nerve being affected, which begins by loss of the teeth and atrophy of the jaws, and sometimes terminates by ulceration and perforation into the antrum. The decision between these theories must be left to the future, but probably a combination of the two would be most satisfactory. At present only one case has been examined after death, and that very incompletely.—*British Medical Journal.*

Normal Urology of Childhood.—Bezy reported the results of investigations by Carron, Monfet and Thadée which establish the following standard for the urology of children past infancy. For each kilogram of the child, and in twenty-four hours, the volume of urine excreted is 30 to 38 c.c., which is one and a half to two times that of an adult; total amount of nitrogen, 30 to 33 c.c., while that of the adult is 28 c.c The elimination of urea varies from 88 to 90 per cent.; the amount of uric acid from 9 to 10 millimeters; in the adult it is 8 millimeters. The amount of phosphoric acid is 77 millimeters, according to Thadée, and 67 according to the others. It decreases with age. —*French Cong. of Gyn. and Pediatry.*

Bronchitis.—Scheppegrell (*N. Y. Med. Jour.*, December 3) considers abnormal nasal respiration the most frequent cause of bronchitis, and one commonly overlooked. As the most prominent conditions which interfere with or prevent normal nasal respiration, he enumerates: 1, Total absence of nasal respiration; 2, partial interference with this function; 3, lowering or loss of the normal nasal function in respiration; 4, pathologic processes in the nasal chambers by which the inspired air may be vitiated.

The Lymph.—L. Asher concludes a study of the lymph in the *Deutsche Med. Woch.* of November 17, with the statement that the lymph-glands are for the purpose of transforming the partially injurious products of metabolism originating in the work of the organs, into substances that can be utilized over again, and consequently the term "lymph" should be restricted henceforth, as the fluid entering the glands differs so essentially from the fluid that emerges. He has also experimentally established that the fluids of the serous cavities, synoviæ, etc., differ from actual lymph. The morphologic indications of increased glandular activity in the vicinity of pathologic foci with increased substance destruction, seem from this standpoint merely the quantitative increase of a mechanism already at work in the organism.

Malarial Fevers on Pacific Coast.—In the *N. Y. Med. Jour.* for December 3, Perry presents results of some observations on this subject, with tables and map showing the regions in which malarial fever prevails. He finds that only the milder forms prevail, nearly always the tertian, occasionally the quartan, but rarely the aestivo-autumnal variety. In Washington they prevail only along one or two rivers in the Puget Sound Basin, the Columbia River Valley, Chehalis Valley, Yakima Valley, with an occasional case in the Columbia River Valley of the northeastern part of the State. The disease, in Oregon, is found only in the Columbia River Valley, Willamette Valley, Rogue River Valley, Umatilla Valley, with a few cases in the Columbia lowlands of Gilliam County. In California's Sacramento Valley, San Joaquin Valley, Tulare Basin and Kern Valley, with an occasional case in the Santa Clara Valley, the disease occurs.

Bilateral Resection of the Pneumogastric.—Prof. J. Pavloff has several animals on exhibition in which the vagus was cut on both sides, six to seven months ago. The only disturbance seems to be in the digestive function. There has been no pulmonary edema or pneumonia, as the animals were not allowed to get any food into the trachea or bronchi.—*Munich Med. Woch.*, November 15.

Cherry-Stone in the Eustachian Tube.—G. Trautmann reports a case of severe chronic, suppurating otitis media, with perforation, in which syringing with tepid water dislodged and expelled a cherry-stone in the Eustachian tube, the cause of the ascending suppuration. As the patient spat it out of his mouth at the third syringeful, he observed that "his head was all free again" and all the lesions healed promptly. There was nothing to indicate its presence, but all efforts to cure the otitis would have been fruitless if it had not been discovered.—*Munich Med. Woch.*, November 22.

Carbolic Acid in the Eye.—Dr. Ray of Louisville reports a medico-legal case of interest, in which a medical friend of his, practicing in central Kentuky, was concerned. Dr. A. was accused of accidentally dropping carbolic acid in the eyes of a new-born infant suffering with ophthalmia neonatorum. He was sued for damages, and Dr. Ray was asked to testify on the witness-stand. The circumstances were these: A child suffering with ophthalmia neonatorum had been ordered a solution of nitrate of silver and the nurse in attendance placed the bottle on the mantel, and along beside it she also placed a bottle of carbolic acid which had been used in disinfecting the vessels around the lying-in-chamber. The Doctor was unaware of the fact that there was any carbolic acid in the house. He came in one evening about dark to see the child, and it was apparently doing very well in about the second week of a purulent ophthalmia involving both eyes. He had the nurse take the child in her lap near the window, and he walked to the mantel and took up the bottle which was in the place he had been in the habit of finding the bottle of nitrate of silver solution, then took a medicine dropper and drew a few drops of the fluid into it and sat down to cleanse the eyes preparatory to dropping into them the solution. As usually happens, the lids were very much swollen, and in getting them open they became everted, so it was difficult for him to expose the cornea. With the lids everted in this way he dropped a drop of carbolic acid upon the exposed conjunctiva. He stated on the witness-stand, however, that he was unable to see the cornea, and that the carbolic acid only came in contact with the under surface of the lid. It ran down the side of the face over the lid and produced a little white discoloration characteristic of carbolic acid burning, and he immediately thought something was wrong. The child cried very hard, and he asked the nurse what the liquid was. She said it was the medicine he had placed upon the mantel. He went again to the mantel and found the bottle of nitrate of silver solution there untouched, and also found that he had used carbolic acid instead. He immediately washed the eye as thoroughly as possible and applied some vaselin. The child recovered with a large central leucoma, and the doctor was sued for $5000 damages. Asked if he ever used carbolic acid about the eye, Dr. Ray told them he did. Asked if he ever used chemically pure carbolic acid, he replied that he had done so a number of times; that he frequently applied pure carbolic acid to corneal ulcerations with a probe wrapped with absorbent cotton. Asked what he thought would be the effect of carbolic acid upon the cornea, he stated that it would be superficial; that the effect of pure carbolic acid to the healthy cornea would be to simply erode the epithelium. The Doctor was mulcted for $350. Dr. R. does not believe that pure carbolic acid will produce a perforation of the cornea; it will destroy the epithelial layer, but that will be all. But in an eye the seat of ophthalmia neonatorum, the disease itself, in connection with the erosive effect of carbolic acid, might result in perforation of the cornea. It is well known to all that under the most approved methods of treatment a great many eyes are lost from ophthalmia neonatorum. —*American Practitioner*, October 15.

Ginseng in Korea.—Dr. Horace Allen, the United States Minister at Séoul, states that the Korean ginseng can not be regarded as inert, however correct the opinion may be of those medical writers who have reported the American root has no therapeutic power. The root is the panacea for most of the ills of the Chinese and Koreans, and has held this reputation for centuries. It is regarded by these people as a strong aphrodisiac. Quinin has been shown to be so much more efficacious in the frequent malarial fevers of these countries that ginseng has lost some of its popularity in these cases; but, wherever a tonic or a "heating medicine" is needed, ginseng continues to be resorted to, and by combination with quinin its reputation will be enhanced rather than diminished. It is supposed to owe its great popularity in China to its properties as an aphrodisiac. The district where much of the Korean root is grown is hilly or mountainous. The climate is much the same as that of the northern portions of our Central States, except that here there is a distinct rainy season, some forty inches of rain falling during July and August. It is possible that our summers may be too dry for the successful cultivation of this plant. Michigan would probably be the best place for making an attempt at the cultivation. Wild ginseng is supposed in Korea to possess almost magic properties. Such roots are usually kept for the royal family. The cultivated ginseng requires seven years to mature. It is raised in little plots of richly manured soil, well mixed with leaf mold. The beds are carefully covered by mats or other protection, raised sufficiently to allow of cultivation and of the free access of air, and care must be given to keep the plants moist and free from weeds. As there seems to be almost unlimited demand for this root in China, it might as well be produced, in all its excellence, in the United States if possible. The American and Korean ginsang roots differ in appearance; the American seems to be made up largely of fibrous roots called "beard," while the Korean root is more compact. The two are given different names by botanists. The Chinese plant is called *Aralia schinseng*, while the American is called *Aralia quinquefolia*. There is by some believed to be a difference in the effect produced by the use of these two roots. There is no market for the powdered root; the Chinaman who pays from a half-dollar to $100 for an ounce of ginseng, wants all his money's worth. The powder might be made of any similar root of no value. Ginseng, like wine, increases in value with age. The best ginseng has been growing for 100 to 200 years. The Korean ginseng is supposed to arrive at perfection after thirty years, although it is used after six years. This is one of the reasons why ginseng is so high-priced. I take it for granted that the

American ginseng is wild, and so may be of any age, even more than a century old. The age is told by counting the rings on the center and side roots, or those parts resembling the torso and arms. Dr. Chung King-u, Imperial Medical College of Tientsin, resident surgeon of the Tung Wa Hospital at Hongkong, the only hospital in China which is devoted to Chinese medical practice, but which is under the supervision of a Chinese physician versed in western medicine, states that in his experience he has failed to observe any definite results obtained by the use of ginseng. Its use among the Chinese is entirely empiric, and its efficacy depends upon the imagination of the patient.

Malt Combinations.—The diet of the adult human is, and must be, largely made up of carbohydrates, whose place of preparation into assimilable forms is in the small intestine. It is perhaps too much to say that a majority of the cases of so-called dyspepsia are in reality that of impaired or deficient intestinal digestion. If the food has been well masticated, and if the stomach is able to carry on its motor function and then to empty its contents into the duodenum, and if indigestion then occurs, the source of the trouble, in a majority of cases, will be found to be in the small intestine. Of all the diffusible enzymes, the special function of which is to convert starch into dextrin and later into maltose, diastase is one of the most efficient. This ferment, or one having exactly the same action, is a very essential part of the pancreatic juice, and under favorable conditions it is able to convert many thousand times its own weight of starch into dextrin. Diastase is a soluble albuminoid enzyme germinated from the gluten or cereals at the time of sprouting. Vegetable diastase, ptyalin and pancreatic diastase all act in exactly the same way, being capable of acting upon cooked starch with great rapidity. The essential factor which assures this rapidity of action is that the diastase shall be present in large quantity; when the relative proportion of the enzyme is large in comparison with the amount of starch the tranformation goes on rapidly and the action continues for a long time. Since a large part of the digestive work is done in the small intestine, and since the ferment called pancreatic diastase or amylopsin has consigned to it the digestion of all the starchy food which is contained in the diet, since the action of pancreatic diastase and of vegetable or malt diastase is so identic as to be incapable of distinction, it is no wonder that the preparations of malt diastase have come into general use in the treatment of all the varied forms of indigestion. The preparation of vegetable diastase known as "maltzyme" has come into general use among physicians, and the fact that it has received the patronage and endorsement of medical men all over the country, is proof positive that the preparation is strong in diastatic power. Maltzyme is not alone efficient in digestive power, but it is also pleasing and palatable, and furnishes an ideal vehicle for the administration of the other remedies with which it has been combined—cod-liver oil, cascara and the hypophosphites. Maltzyme preparations are nutritive as well as highly diastatic, because they contain predigested carbohydrates and nitrogenous material combined with the phosphates of the grain. It is highly important that all who practice medicine should recognize the value of the best preparations of malt, for it is often necessary, while giving treatment to separate organs, that the physician should give special attention to the digestive organs and processes, or else he will find his results unsatisfactory.—*Jour. of Med. and Sci.*, September.

A Quinquennial Census Necessary.—Dr. E. W. Hope of Liverpool objects to the official estimate of population in his city, as based upon the regular decennial census. He has been a careful student of the subject for many years, and it is his belief that a material underestimation of his city's growth has resulted from "the rule of thumb" measures and methods that obtain in official circles. He says that during recent years reasons have been growing stronger for calling into question the correctness of the results of the method adopted by the registrar-general for estimating the population of the city. The method, it will be remembered, is based upon the assumption that the rate of change (increase or decrease) in the various districts of the city which took place year by year during the intercensal period ending in 1801 has continued since. The registrar general estimates that the population has increased from 629,443 in 1891 to 633,645 in 1898, i.e., the total population of greater Liverpool has increased by 600 every year, making a total increase during the seven years of 5200. The reasons for believing that this estimate is very much below what the population actually is may be summarized in the following manner: The natural increase of the population, viz., the increase in the number of births over deaths since the census of 1891, exceeds 40,000. The increase in the number of registered voters since the last census exceeds 26,000. The increase in the number of houses built over those which have been demolished since the last census is close upon 3500. The increase in the number of inhabited houses since the last census was found, by police inquiry early in the year, to be upward of 14,400; making a liberal deduction of 5 per cent. for a possible margin of error, leaves an increase of 13,620. Each of these facts suggests strongly that the actual increase has been greater than the estimated increase. Clearly, what is wanted is a more frequent census for the whole country, certainly not less frequently than every five years. It is singular that the registrar-general is satisfied week after week and year after year to publish, under the imprimatur of his office, figures which everyone conversant with the subject must hesitate to accept as correct. No word of explanation, no word of warning, no comment is issued with these returns; cities and districts are strung together for comparison, with egregiously misleading results, and with consequences which tend to cripple and retard sanitation. No doubt a quinquennial census would go far to correct these mistakes, and tend not only to prevent the waste of time involved by the compilation and issue of fictitious returns, but also to put an end to the mischief which such returns give rise to. But, pending such a census, it is unsatisfactory to find that the registrar-general regards the subject as of so little importance as to decline to discuss it, preferring to leave the matter for his successor to deal with. The decennial census was inaugurated one hundred years ago, and the benefits afforded by it now require to be supplemented by a quinquennial one. At the meeting of the Section of State Medicine of the British Medical Association in Edinburgh, July 27, 1898, a resolution was unanimously passed to the effect that it was absolutely essential that a qinquennial census of the whole country should be taken in order to ensure accuracy in statistics relating to the public health. In Germany a five-year census is taken, and in Japan the register of the population of each sub-district is corrected annually by the addition of infants born or of persons domiciled in the district, and by the removal of persons dying or leaving the district.—*Public Health*, October.

The Teaching of Anatomy.—The teaching of anatomy at Columbia University has reached the differentiation stage of progress. A new curriculum has been adopted, in such a manner that the topics will be distributed in a two-year course in human anatomy, and the students may be distinguished as being either of the elementary or the advanced classes. Dr. G. S. Huntington of the College of Physicians and Surgeons, who has labored early and late to bring about this improvement in his branch, has published his views of the probable results of the new teaching, in *Bulletin* XX, of the Columbia University. He says that the new plan has enabled his school to solve a part of the problems of the intelligent education of his pupils in as nearly a satisfactory manner as seems now to be possible.

The first-year student does not attend any lectures in anatomy. During this year the instruction consists in practical demonstrations to small sections of the class, dealing with the entire anatomy of the extremities and with the bones, joints, muscles and blood-vessels of the head and neck, including also part of the peripheral nervous system of this region. In direct connection with the demonstrations, extensive practical work in the dissecting-room is required. The first-year student also attends a series of demonstrations constituting the preliminary visceral course, designed to afford that general information regarding the body cavities and their contents which is requisite to the correct appreciation of the concurrent instruction offered by the departments of physiology and histology. In the second year the laboratory work continuing, the student attends demonstrations to sections of the class in the anatomy of the central nervous system, organs of special sense and cranial nerves. The entire second-year class attends three lectures a week on the anatomy of the body cavities and viscera. The preparations illustrating these lectures are, in the afternoon of the lecture-days, demonstrated again separately to sections of the class, enabling each student to study and inspect the same closely. In this way an opportunity is given to make the anatomic lecture what it should strive to be, not an attempt to teach anatomy at long range to several hundred men at once, but an occasion for presenting the broad morphologic principles upon which the animal organs, apparatus and symptoms are constructed. Here the significance and importance of the structural peculiarities of the man can be accentuated, illustrated, and explained in all their bearings by contrast with the corresponding structures of the lower vertebrates. It is quite evident that the institution must command the requisite material for illustration in order to carry out a liberal plan of instruction in general morphology. The progress of the last eight years in this respect has been gratifying. The morphologic museum began its development in 1890 in one of the small rooms in the cellar of the south wing. Columbia today possesses an equipment which, while it still falls short of the ultimate design, yet is unequalled in the beauty and clearness of the preparations, and in the complete character of the series most extensively used in the courses of instruction. The first and second floors of the new anatomic building are designed to be the permanent home of the museum, and provide ample floor and gallery space. It is the confident hope of the department that here the future growth of the collection will be as rapid and healthy as it has been in the past under less favorable surroundings. Unfortunately, however, it was found necessary at the time the anatomic building was erected to leave out the equipment, and the department is today in urgent need of cases for the two floors. The old cases inherited from the pathologic museum are overcrowded and have to be used merely for storage. The museum loses one of its most important educational features in not being accessible for purposes of serious study in present condition. It is not possible to carry out the systematic serial exhibition which is the fundamental principle in the application of the collection of the student.

Surgical Scenes in Asia Minor.—Dr. William S. Dodd, a medical missionary at Cesarea, Asia Minor, writes of his surgical experiences following a little local war or revolt. He says: "When I have read the surgical reports from the army at Santiago, and learned that out of nearly thirteen hundred wounded, only sixty-eight died, and hardly one of these from wound infection, I could not but contrast such a condition with the results of a recent incident in this land. The preparations made for the immediate application of antiseptic dressings to the wounds by the wounded themselves or by their comrades, together with the general intelligence of the men who make such preparations effective, is so utterly different from anything that could be thought of in this land on the part either of the people or the authorities as to make one realize the blessings of civilization and Christianity. A week after the fight there came to me a messenger from Oozoonloo, requesting me to see the wounded. Not a physician or surgeon had been sent by the Government to look after the suffering. In this country there are no physicians except in the cities, so that the region for a distance of ninety miles is a blank, as far as medical service is concerned. Before I could go I must have the permission of the Government; official word must be sent back and forth before this could be secured, inasmuch as Oozoonloo is not under our own governor; and so it was eleven days after the battle when I reached there. I found then that a Turkish physician had reached there shortly before me, but he knew nothing of surgery, had no antiseptics with him, and the wounds were, of course, all in a horribly septic condition. Many of them had had no change of dressing for several days, and these, too, compound and comminuted fractures of large bones. The village dressing in such cases ofttimes consists of fresh manure applied with the idea of reducing inflammation. In the case of the father of a poor family of six children, on whose account more than of any other one person I had been begged to come, lockjaw had already set in, and he died soon after. The Turkish physician had no idea of drainage for these deep discharging wounds, having plugged them all with pieces of twisted wicking, the universal method of "drainage" in this country. I used up three yards of drainage tubing in dressing seventeen cases. I left a supply of antiseptics and of directions with the man who does the local "doctoring" of the place, and so came away feeling that my visit would not be wholly in vain. The whole incident is pre-eminently Turkish. The change of the seat of government for the sake of self-interest of officials, the element of bribery in the case, the foolish opposition of the people, their persuasion that force would not be used against them, the encouragement to this belief from the long dallying of the authorities, the final outburst ten times more bloody than was needed, the neglect of the suffering and carelessness for their welfare, and the ignorance of the official government physician who came more to make a report on the wounds of the dead than to care for the living—all these are just what one would expect in Turkey.—*The Evangelist.*

Medical Inspector for the Army.—Col. Charles R. Greenleaf, assistant surgeon general, U. S. A., has been assigned to duty as medical inspector. The scope of his duties has been defined in a letter addressed to him, Dec. 3, 1898, by the Surgeon-General, as follows: In the discharge of your duties as medical inspector of the army you are expected to report to me upon the sanitary condition and wants of troops in the field, at military posts and in general hospitals, and as regards the skill, efficiency and conduct of officers, enlisted men and civilian employes connected with the medical department. You will see that existing orders and regulations relating to the medical department are complied with, and that all prescribed reports and returns are promptly made and forwarded when due. You will examine into the quality, quantity and condition of medical and hospital supplies, reporting any failure upon the part of responsible medical officers to make proper requisitions, and any deficiencies found due to failure on the part of supply officers to promptly fill approved requisitions. You will ascertain what diseases are most prevalent in the camps visited by you, and will inquire into the cause of such prevalence and the steps which have been taken for the prevention or arrest of any infectious diseases which may exist, indicating verbally or in writing to the responsible medical officers such additional measures or precautions as may be requisite. When sanitary reforms requiring the sanction and co-operation of military authorities are urgently demanded, you will report at once, in

writing, to the officer commanding the military department, corps, division or camp, calling his attention to the facts, and recommending such measures as you consider necessary for the relief of insanitary conditions existing. A duplicate of such report should be forwarded to the Surgeon-General of the army. You will ascertain whether medical supplies are properly used and with due regard to economy; whether any additional articles not now included in our supply-tables are necessary for the treatment of the sick; whether the equipment of regimental hospitals is such as is contemplated by recent orders; whether cases of infectious diseases or of soldiers seriously ill are improperly retained in regimental hospitals; whether division hospitals are fully equipped as regards supplies, medical officers and attendants to properly care for the sick of the command to which they belong; and whether contract surgeons have been examined as prescribed by recent orders. You will give especial attention to diet kitchens, and see that they are equipped for providing the sick with suitable light diet. You will ascertain whether a proper use is made of the fund provided for the purchase of suitable articles of diet for the sick, as prescribed in General Orders No. 116, and whether the commissary department has on hand for sale such articles as are necessary. You will also inquire as to the sufficiency of tents, ambulances, and other articles furnished by the quartermaster's department. You will report any abuses or deficiencies existing to the commanding general of the department, corps, division, camp or military post, sending a duplicate of this report to the Surgeon-General of the army. You will also report upon the professional competence, attention to duty, and general qualifications of medical officers, calling the attention of the Surgeon-General to those who deserve especial commendation, and also to those who are considered incompetent, or for any reason undesirable members of the medical department. You should give special attention to the efficiency of the hospital corps, reporting whether proper discipline is maintained and proper instruction given in all that pertains to the duties of enlisted men of that corps.

Not Synonymous.—According to a judge of the court of the State of Rhode Island and Providence Plantations, medicine, in the popular sense, is a remedial substance. The practice of medicine, as ordinarily or popularly understood, has relation to the art of preventing, curing or alleviating disease or pain. It rests largely in the sciences of anatomy, physiology and hygiene. It requires a knowledge of disease, its origin, its anatomic and physiologic features, and its causative relations; and further, it requires a knowledge of drugs, their preparation and action. Popularly, it consists in the discovery of the cause and nature of disease and the administration of remedies or the prescribing of treatment therefor. This all assumes importance when the supreme court of Rhode Island says, in the case of State vs. Mylod, July 18, 1898, that, in the construction of penal statutes, a well-established rule is that words and phrases must be taken in their ordinary acceptation and popular meaning, unless a contrary intent appears, and that the words "practice of medicine" must be taken in this, their ordinary or popular meaning, in determining whether a statute regulating same is violated by certain acts of a Christian scientist, for example. Its conclusion is that prayer for those suffering from disease, or words of encouragement, or the teaching that disease will disappear and physical perfection be attained as a result of prayer, or that humanity will be brought into harmony with God by right thinking and a fixed determination to look on the bright side of life, does not constitute the practice of medicine in the popular sense nor, therefore, violate the statute referred to. And the court does not think that because the statute applies not only to those who actually practice, but also to those who announce in any way a readiness to practice, that the legislature intended to give a broader than the generally accepted meaning to the words "practice of medicine." The most that it thinks can be claimed for this feature of the statute is that it operates to broaden the offense created by the statute so that the attempt or the announcement of a readiness to practice medicine becomes equivalent to the actual practice. Furthermore, a recognition by the statute of the existence among medical men of differences regarding the treatment of disease, while certain diseases are treated by the "regular school" without the use of drugs, the court maintains, does not broaden the meaning of the words "practice of medicine" to include the practice of that which, in the popular sense, is not a practice of medicine. To give to the words "practice of medicine" the construction claimed for them, it also suggests, would lead to unintended results, because, if the practice of Christian Science is the practice of medicine, Christian Science is a school or system of medicine, and is entitled to recognition by the State board of health to the same extent as other schools or systems of medicine, as, under the statute under consideration, the board has no arbitrary power, and can only determine whether the applicant possesses the statutory qualification to practice in accordance with the recognized theories of a particular school or system. To protect the public, not from theories, but from the acts of incompetent persons, the court goes on to say, the legislature has prescribed the qualifications of those who may be entitled to perform the important duties of medical practitioners. The statute is not for the purpose of compelling persons suffering from disease to resort to remedies, but is designed to secure to those desiring remedies competent physicians to prepare and administer them. Nor does it, in terms, prohibit the use of the word "doctor" by any person, whatever his business or profession may be. The assumption of that title by a Christian scientist is not unlawful, and the use of the word is entirely immaterial in any case, unless under such conditions or circumstances, or in such connection, that it may serve as an announcement or indication of a readiness to engage in the practice of medicine or surgery.

Necessity of Intestinal Bacteria.—Schottelius recently raised some chickens from the egg in absolutely aseptic conditions, with the result that the fowls did not thrive like the control-chickens, but gradually dwindled away and died by the seventeenth day.—*Munich Med. Woch.*, No. 36.

Physicians' Strike.—The difficulties between the profession and the "sickness insurance associations" in Germany culminated recently in a definite "strike" on the part of the medical men in two German cities. The strike at Barmen resulted in favor of the physicians, as a satisfactory compromise was effected, but at Remscheid the organization won the day, bringing in outsiders to fill the vacancy, although with the result of the founding of a new association with the former medical attendants. These associations to provide medical attendance in case of illness, are for the benefit of the laboring classes, and are mostly managed by working men or small trades-people, who assert their mastery over the physicians who contract to attend to their sick, by appointing and dismissing them at pleasure, a system which leads to many abuses. It has been abolished in some places where the association makes a contract with some local medical society, any members of which can be summoned to their sick at contract rates.

Red Ant Pest at Albany.—Taken individually, the small red ant (*Monomorium pharannis*) is not difficult of extinction. A well-planted foot will terminate the existence of the hardiest specimen. Taken en masse, however, he prospers exceedingly, even under adverse conditions, and his multiplication is fairly logarithmic for speed. Pouring boiling water, benzin or kerosene emulsion upon his domicile, if it can be found, tends to discourage him. The difficulty is to track him to his lair. Old and rotting woodwork is a favorite abode of his, and the old-

fashioned wooden sidewalk forms a roof of easy exit for populous ant cities. It is unlikely that the Albany correspondent will be troubled further this year by the small red pests. If he will start in early next summer and trail home the first red ant he sees about the house, he will probably be able, by a liberal use of the hot water boiler, to free his own immediate vicinity from the industrious and pervasive insects.—*New York Sun.*

Gleanings.—The *Bulletin de la Soc. de Pharmacie* states that bismuth salicylate should be rejected on account of its uncertainty and impurities, and the subnitrate used or, better still, the "cream of bismuth," the hydrate of bismuth oxid. . . . Orthoform is warmly recommended for cracked nipples. Besides its analgesic action it is siccative and antiseptic, healing the cracks in a few days. . . . Nitrate of silver crayons are found more effective than the solution, for buboes, panaris, etc. A crayon 2 to 4 mm. in length, inserted and left, will rapidly cure the lesion without too much caustic action (*Semaine Méd.*, November 16). . . . Netter ascribes to the sterilization a case of infantile scorbutus in a child fed exclusively with home Soxhlet sterilized milk from a well-directed dairy. In 103 observations there were only 11 in which similar conditions prevailed. In 29, the milk was bought ready sterilized. The rest used various preparations (*Bull. des Hôp.*, November 10). . . . Birth of twins with eleven days interval between them (*Lyons Méd.*). . . . Wolfe reports the case of a healthy woman who never menstruated, but when 45 years of age was much frightened by an insane girl, commenced to menstruate the same day, and eight months later conceived and bore a healthy child (*Lancet*, August). . . . Schultze adds another to the eight cases on record of echinococcus ovarii; not diagnosed before operating; patient recovered a year later. . . . Non-closure of the foramen ovale forming almost entire absence of septum in patient of 42 years, and in another of 62 (*Deutsche Med. Woch.*, November 17). . . . Lechner describes the case of a student who can make one eye go through the motions of abduction and adduction, while the other is fastened on a fixed spot, without varying the accommodation. It confirms Herring's law in regard to the associated innervation of the ocular muscles (*Graefe's Archiv.*, No. 3). . . . Professor Hayem's new clinic at the Saint-Antoine is arranged so that it can be darkened at a moment's notice, for radiographic work, projections of microscopic preparations, etc. . . . Two cases of tubo-abdominal wall fistulas are reported, through which menstruation occurred during the period, showing the bloody discharge in the tubes as in the uterus (*Cbl. f. Gyn.*, No. 45). . . . Rose recommends a wedge-shaped excision of the tubes from the uterus to protect against subsequent gonorrheal infection of the peritoneum, or to insure sterility. . . . Case of fatal intoxication from injection of gray oil (*Berlin klin. Woch.*, No. 46). . . . Case of noma after scarlet fever, with congenital syphilis, cured with potassium iodid (*Deutsche Med. Woch.*, 46). . . . Three cases of aneurysm of the mitral valve, observed by Drasche. Peculiar musical sounds noted. Small chronic aneurysms of this kind sometimes heal spontaneously (*Vienna klin. Woch.*, 45). . . . Case of myxedema in woman of 47 years, progressing for years, completely cured with thyroid tablets. . . . According to the *Munich Med. Woch.* of November 22, Finsen's "Light Institute" at Copenhagen (vide JOURNAL, page 303) is richly endowed, and the daughters of the best families volunteer their services as attendants. His treatment of lupus with concentrated electric light is proving very successful. . . . Unfavorable influence of kidney troubles on the course of an infective disease is confirmed anew by a fatal case of measles in a patient with nephritis (*Vienna klin. Rund.*, 47). . . . Naughehauer reports a case of extra-uterine pregnancy nearly at term; living child extracted through the abdomen; mother recovered; placenta implanted in the cavum vesico-uterine (*Vienna klin. Rund.*, 47). . . . Sudnik has found the "high frequency" current very valuable in reducing an intracaracoid luxation of the shoulder. Besides its anesthetic effect it acts directly upon traumatic contractions (*Journal d' Hygiene*, Nov. 17).

Old Plantation Malady.—Doctor: Your wife must have chicken broth three times a day, and you must give her a spoonful of this medicine every hour during the night. Mr. Jackson (dubiously): Wa-al, doctah, I doan' see how yo' specks me toe pervide her wif de chicken broff and gib her dat medicine at de same time.—*Factotum.*

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward, for the week ended December 3, shows the total number of deaths to have been 117, of which 69 were white and 48 colored. The principal causes of death were: consumption, diphtheria, nervous diseases, heart diseases, diseases of the kidney, pneumonia, scarlet fever and typhoid fever. At the close of the week there were 123 cases each of diphtheria and scarlet fever under treatment.

NEW MUNICIPAL HOSPITAL.—Senator McMillan has introduced a bill in the Senate which provides for the building of a new municipal hospital, in which shall be treated the patients now cared for in the Columbia, Freedman and Almshouse Hospitals. The bill directs the trustees of the Columbia Hospital to sell that property and hand the proceeds into the United States Treasury Department. It further provides for an appropriation of $200,000 for the purchase of a site for the proposed hospital, and a further sum of $50,000 to begin the erection of buildings, which may, when completed, cost $200,000.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The monthly meeting of the attending staff was held December 3, to receive the report for the month of November, which was as follows: Number of new cases, 566; number of ward patients, 81; number of emergency cases, 362; number of redressings, 188; number of prescriptions, 2989; number of deaths, 7; number of postmortems, 4. Dr. Mohart, assistant resident physician, who has been seriously ill for the past two weeks, is now convalescing and will shortly resume his duties. Dr. James R. Church, the medical hero of the Rough Riders, and formerly a resident physician of the hospital, has successfully passed the examination and been admitted as a surgeon of the regular army. Dr. Church is a graduate of the Columbian University.

Louisville.

A RETROSPECT.—Dr. T. B. Greenley of Meadow Lawn, Ky., read a very interesting paper before the Filson Club on the 5th inst., entitled, "The Doctors of Long Ago," which was a delightful reminiscence of the physicians of Louisville during a period between 1844 and 1846, during which time Dr. Greenley was a student of the University of Louisville Medical Department, and subsequent years. The oldest physician in Louisville at that time he said was Dr. Hall, who in 1797 was elected assessor of the town, which then consisted of not more than 500 inhabitants. Another of the pioneer physicians mentioned was Jas. C. Johnson, the first white male child born in Louisville after its settlement on the banks of the Ohio. Dr. Greenley is still in active practice, though more than 80 years of age, and has long been an active medical society worker, last year attending the meeting of the Kentucky State Medical Society, three local and county medical meetings, the AMERICAN MEDICAL ASSOCIATION in Denver, and the meeting of the International Association of Railway Surgeons at Montreal, he being the local surgeon at Meadow Lawn to the Illinois Central R. R.

APPROPRIATION.—Among the appropriations mentioned in the dispatches from Washington is one of $8,500 for the Marine

pulse rapid; the temperature curve is irregular, differing materially from that in typhoid. The history of tubercular lesions elsewhere and tubercular parentage are important factors in diagnosis.

Dr. ACKER, in discussion, referred to two cases of tubercular meningitis which occurred in his practice in the Children's Hospital of this city, and which he had reported at the last meeting of the American Pediatric Society. The first case presented a tubercular history and was rachitic and suffered from retracted head, apathy, screaming, and had irregular pulse and temperature. The second case gave a history of adenitis and keratitis, and suffered from vomiting, apathy, irregular pulse and temperature and violent headache; both these cases recovered. He quoted Dr. Jacobi as saying that he knew of one case, which he thought to be tubercular meningitis, which recovered, but had known of no others; the doubt in diagnosis being the recovery. Dr. Jacobi says the diagnosis was based: 1, on the reaction to tuberculin; 2, examination of eyes, which would present characteristic appearance of choroid coat. Post-basic meningitis gives the same symptoms and lumbar puncture is the only means of diagnosis. In tubercular meningitis the diplococcus is found. He said that Dr. Northrup gives as diagnostic in infants: persistent vomiting, apathy, irregular pulse and respiration. The Doctor said he based the diagnosis on: previous history, persistent vomiting, local spasm (head drawn to side or back) and hereditary history. Low temperature is frequent. He said all these symptoms may be present in a case and the postmortem would sometimes fail to show the presence of tubercle.

Dr. LOCHBOEHLER referred to a case in his practice in which there were no spasm or rigidity. The temperature ranged between 100 and 106, but was normal for six days. The pulse was feeble and ranged from 140 upward.

Dr. S. S. ADAMS said that diagnosis depends on the stage of disease and age of the child. It may be confounded with typhoid, and the diagnosis is impossible in the earlier stage of irritation, bnt easy when irritation is at its height, because the temperature is then low. In all other diseases of advanced cerebral irritation, the temperature is high.

Dr. W. W. JOHNSTON mentioned a case in which lumbar puncture afforded great relief for twenty-four hours.

NECROLOGY.

ELLIS G. ARMSTRONG, M.D., Flora, Ind., November 23.—W. H. Baker, M.D., Lynchburg, Va., November 27.—Charles M. G. Brant, M.D., Omaha, Neb., November 25.—Edwin Carson, M.D., San Diego, Cal., November 24, aged 40 years.—George Coryell, M.D., Riverside, Ill., November 28, aged 89 years.—Albert J. Phillips, M.D., Baltimore, Md., November 24, aged 43 years.—Thomas W. Simmonds, M.D., Martinsville, Va., November 21, aged 38 years.—F. H. Van Valzan, M.D., Spring Mills, Pa., November 26, aged 60 years.

JAMES ALEXANDER MOORE, M.D., Bellevue, New York City, 1883, died at his home in Helena, Mont., November 29. He was a son of the late William Moore of St. Croix, Danish West Indies.

MISCELLANY.

Carcinoma Hardened With Formalin.—Bayer urges further tests with his method of destroying the vitality of a carcinoma with injections of formalin, transforming it into a dead, removable mass.—*Die Aerztl. Praxis.*

Peculiar Stainable Bodies in Syphilitic Products.—F. Winkler announces the discovery of regular spherical bodies in the various lesions of syphilis (gumma, condyloma, sclerosis, lymph-gland, etc., and even in the sperm of syphilitics) never found in any other disease. They have each an eccentric light spot. Unna has been studying them with him and both agree that they are neither blastomycetes, nor hyaline products, but a peculiar, hitherto undescribed product of syphilis, of strikingly regular structure, which deserve a special place in histopathology. They stain with thiodin or toluidin blue and decolor with formalin, or they can be stained with polychromic methylene blue and decolored with iodized alcohol or the glycerin-ether mixture. They are more prominent if the tissue is stained with orange or eosin.—*Munich Med. Woch.*, November 8.

Perforating Ulcer of the Mouth.—Letulle of Lille has reported an instance of this rare condition in a male, aged 50 years, an alleged alcoholic subject, who presented fairly well-marked symptoms of tabes. The teeth in the left half of the lower jaw were all wanting except the central incisor, those on the right side being healthy. In the upper jaw there were only three teeth left, and apart from the persisting teeth the alveolar border was atrophied; on the right side of the upper jaw there was a cavity involving the alveolar border and the hard palate, opening like a cone into the middle meatus of the nose. The mucous membrane lining it was pale, thickened, but not ulcerated; its sensibility was much impaired. The patient was not aware of this condition, but on being questioned he said that liquid food had for five months come through the right nostril. This lesion is rare; Baudet has collected eight cases chiefly on the subject of tabes. It may be unilateral or bilateral, but always occurs in the same situation. As to the explanation of the lesion, there are two views: that of Galippe, that it is the result of alveolar pyorrhea aggravated by tabes; and that of Baudet, that it is an atrophic tabetic lesion due to the fifth nerve being affected, which begins by loss of the teeth and atrophy of the jaws, and sometimes terminates by ulceration and perforation into the antrum. The decision between these theories must be left to the future, but probably a combination of the two would be most satisfactory. At present only one case has been examined after death, and that very incompletely.—*British Medical Journal.*

Normal Urology of Childhood.—Bezy reported the results of investigations by Carron, Monfet and Thadée which establish the following standard for the urology of children past infancy. For each kilogram of the child, and in twenty-four hours, the volume of urine excreted is 30 to 38 c.c., which is one and a half to two times that of an adult; total amount of nitrogen, 30 to 33 c.c., while that of the adult is 28 c.c The elimination of urea varies from 88 to 90 per cent.; the amount of uric acid from 9 to 10 millimeters; in the adult it is 8 millimeters. The amount of phosphoric acid is 77 millimeters, according to Thadée, and 67 according to the others. It decreases with age.—*French Cong. of Gyn. and Pediatry.*

Bronchitis.—Scheppegrell (*N. Y. Med. Jour.*, December 3) considers abnormal nasal respiration the most frequent cause of bronchitis, and one commonly overlooked. As the most prominent conditions which interfere with or prevent normal nasal respiration, he enumerates: 1, Total absence of nasal respiration; 2, partial interference with this function; 3, lowering or loss of the normal nasal function in respiration; 4, pathologic processes in the nasal chambers by which the inspired air may be vitiated.

The Lymph.—L. Asher concludes a study of the lymph in the *Deutsche Med. Woch.* of November 17, with the statement that the lymph-glands are for the purpose of transforming the partially injurious products of metabolism originating in the work of the organs, into substances that can be utilized over again, and consequently the term "lymph" should be restricted henceforth, as the fluid entering the glands differs so essentially from the fluid that emerges. He has also experimentally established that the fluids of the serous cavities, synoviæ, etc., differ from actual lymph. The morphologic indications of increased glandular activity in the vicinity of pathologic foci with increased substance destruction, seem from this standpoint merely the quantitative increase of a mechanism already at work in the organism.

Malarial Fevers on Pacific Coast.—In the *N. Y. Med. Jour.* for December 3, Perry presents results of some observations on this subject, with tables and map showing the regions in which malarial fever prevals. He finds that only the milder forms prevail, nearly always the tertian, occasionally the quartan, but rarely the aestivo-autumnal variety. In Washington they prevail only along one or two rivers in the Puget Sound Basin, the Columbia River Valley, Chehalis Valley, Yakima Valley, with an occasional case in the Columbia River Valley of the northeastern part of the State. The disease, in Oregon, is found only in the Columbia River Valley, Willamette Valley, Rogue River Valley, Umatilla Valley, with a few cases in the Columbia lowlands of Gilliam County. In California's Sacramento Valley, San Joaquin Valley, Tulare Basin and Kern Valley, with an occasional case in the Santa Clara Valley, the disease occurs.

Bilateral Resection of the Pneumogastric.—Prof. J. Pavloff has several animals on exhibition in which the vagus was cut on both sides, six to seven months ago. The only disturbance seems to be in the digestive function. There has been no pulmonary edema or pneumonia, as the animals were not allowed to get any food into the trachea or bronchi.—*Munich Med. Woch.*, November 15.

Cherry-Stone in the Eustachian Tube.—G. Trautmann reports a case of severe chronic, suppurating otitis media, with perforation, in which syringing with tepid water dislodged and expelled a cherry-stone in the Eustachian tube, the cause of the ascending suppuration. As the patient spat it out of his mouth at the third syringeful, he observed that "his head was all free again" and all the lesions healed promptly. There was nothing to indicate its presence, but all efforts to cure the otitis would have been fruitless if it had not been discovered.—*Munich Med. Woch.*, November 22.

Carbolic Acid in the Eye.—Dr. Ray of Louisville reports a medico-legal case of interest, in which a medical friend of his, practicing in central Kentuky, was concerned. Dr. A. was accused of accidentally dropping carbolic acid in the eyes of a new born infant suffering with ophthalmia neonatorum. He was sued for damages, and Dr. Ray was asked to testify on the witness-stand. The circumstances were these: A child suffering with ophthalmia neonatorum had been ordered a solution of nitrate of silver and the nurse in attendance placed the bottle on the mantel, and along beside it she also placed a bottle of carbolic acid which had been used in disinfecting the vessels around the lying-in-chamber. The Doctor was unaware of the fact that there was any carbolic acid in the house. He came in one evening about dark to see the child, and it was apparently doing very well in about the second week of a purulent ophthalmia involving both eyes. He had the nurse take the child in her lap near the window, and he walked to the mantel and took up the bottle which was in the place he had been in the habit of finding the bottle of nitrate of silver solution, then took a medicine dropper and drew a few drops of the fluid into it and sat down to cleanse the eyes preparatory to dropping into them the solution. As usually happens, the lids were very much swollen, and in getting them open they became everted, so it was difficult for him to expose the cornea. With the lids everted in this way he dropped a drop of carbolic acid upon the exposed conjunctiva. He stated on the witness-stand, however, that he was unable to see the cornea, and that the carbolic acid only came in contact with the under surface of the lid. It ran down the side of the face over the lid and produced a little white discoloration characteristic of carbolic acid burning, and he immediately thought something was wrong. The child cried very hard, and he asked the nurse what the liquid was. She said it was the medicine he had placed upon the mantel. He went again to the mantel and found the bottle of nitrate of silver solution there untouched, and also found that he had used carbolic acid instead. He immediately washed the eye as thoroughly as possible and applied some vaselin. The child recovered with a large central leucoma, and the doctor was sued for $5000 damages. Asked if he ever used carbolic acid about the eye, Dr. Ray told them he did. Asked if he ever used chemically pure carbolic acid, he replied that he had done so a number of times; that he frequently applied pure carbolic acid to corneal ulcerations with a probe wrapped with absorbent cotton. Asked what he thought would be the effect of carbolic acid upon the cornea, he stated that it would be superficial; that the effect of pure carbolic acid to the healthy cornea would be to simply erode the epithelium. The Doctor was mulcted for $350. Dr. R. does not believe that pure carbolic acid will produce a perforation of the cornea; it will destroy the epithelial layer, but that will be all. But in an eye the seat of ophthalmia neonatorum, the disease itself, in connection with the erosive effect of carbolic acid, might result in perforation of the cornea. It is well known to all that under the most approved methods of treatment a great many eyes are lost from ophthalmia neonatorum. —*American Practitioner*, October 15.

Ginseng in Korea.—Dr. Horace Allen, the United States Minister at Séoul, states that the Korean ginseng can not be regarded as inert, however correct the opinion may be of those medical writers who have reported the American root has no therapeutic power. The root is the panacea for most of the ills of the Chinese and Koreans, and has held this reputation for centuries. It is regarded by these people as a strong aphrodisiac. Quinin has been shown to be so much more efficacious in the frequent malarial fevers of these countries that ginseng has lost some of its popularity in these cases; but, wherever a tonic or a "heating medicine" is needed, ginseng continues to be resorted to, and by combination with quinin its reputation will be enhanced rather than diminished. It is supposed to owe its great popularity in China to its properties as an aphrodisiac. The district where much of the Korean root is grown is hilly or mountainous. The climate is much the same as that of the northern portions of our Central States, except that here there is a distinct rainy season, some forty inches of rain falling during July and August. It is possible that our summers may be too dry for the successful cultivation of this plant. Michigan would probably be the best place for making an attempt at the cultivation. Wild ginseng is supposed in Korea to possess almost magic properties. Such roots are usually kept for the royal family. The cultivated ginseng requires seven years to mature. It is raised in little plots of richly manured soil, well mixed with leaf mold. The beds are carefully covered by mats or other protection, raised sufficiently to allow of cultivation and of the free access of air, and care must be given to keep the plants moist and free from weeds. As there seems to be almost unlimited demand for this root in China, it might as well be produced, in all its excellence, in the United States if possible. The American and Korean ginsang roots differ in appearance; the American seems to be made up largely of fibrous roots called "beard," while the Korean root is more compact. The two are given different names by botanists. The Chinese plant is called *Aralia schinseng*, while the American is called *Aralia quinquefolia*. There is by some believed to be a difference in the effect produced by the use of these two roots. There is no market for the powdered root; the Chinaman who pays from a half-dollar to $100 for an ounce of ginseng, wants all his money's worth. The powder might be made of any similar root of no value. Ginseng, like wine, increases in value with age. The best ginseng has been growing for 100 to 200 years. The Korean ginseng is supposed to arrive at perfection after thirty years, although it is used after six years. This is one of the reasons why ginseng is so high-priced. I take it for granted that the

American ginseng is wild, and so may be of any age, even more than a century old. The age is told by counting the rings on the center and side roots, or those parts resembling the torso and arms. Dr. Chung King-u, Imperial Medical College of Tientsin, resident surgeon of the Tung Wa Hospital at Hongkong, the only hospital in China which is devoted to Chinese medical practice, but which is under the supervision of a Chinese physician versed in western medicine, states that in his experience he has failed to observe any definite results obtained by the use of ginseng. Its use among the Chinese is entirely empiric, and its efficacy depends upon the imagination of the patient.

Malt Combinations.—The diet of the adult human is, and must be, largely made up of carbohydrates, whose place of preparation into assimilable forms is in the small intestine. It is perhaps too much to say that a majority of the cases of so-called dyspepsia are in reality that of impaired or deficient intestinal digestion. If the food has been well masticated, and if the stomach is able to carry on its motor function and then to empty its contents into the duodenum, and if indigestion then occurs, the source of the trouble, in a majority of cases, will be found to be in the small intestine. Of all the diffusible enzymes, the special function of which is to convert starch into dextrin and later into maltose, diastase is one of the most efficient. This ferment, or one having exactly the same action, is a very essential part of the pancreatic juice, and under favorable conditions it is able to convert many thousand times its own weight of starch into dextrin. Diastase is a soluble albuminoid enzyme germinated from the gluten or cereals at the time of sprouting. Vegetable diastase, ptyalin and pancreatic diastase all act in exactly the same way, being capable of acting upon cooked starch with great rapidity. The essential factor which assures this rapidity of action is that the diastase shall be present in large quantity; when the relative proportion of the enzyme is large in comparison with the amount of starch the tranformation goes on rapidly and the action continues for a long time. Since a large part of the digestive work is done in the small intestine, and since the ferment called pancreatic diastase or amylopsin has consigned to it the digestion of all the starchy food which is contained in the diet, since the action of pancreatic diastase and of vegetable or malt diastase is so identic as to be incapable of distinction, it is no wonder that the preparations of malt diastase have come into general use in the treatment of all the varied forms of indigestion. The preparation of vegetable diastase known as "maltzyme" has come into general use among physicians, and the fact that it has received the patronage and endorsement of medical men all over the country, is proof positive that the preparation is strong in diastatic power. Maltzyme is not alone efficient in digestive power, but it is also pleasing and palatable, and furnishes an ideal vehicle for the administration of the other remedies with which it has been combined—cod-liver oil, cascara and the hypophosphites. Maltzyme preparations are nutritive as well as highly diastatic, because they contain predigested carbohydrates and nitrogenous material combined with the phosphates of the grain. It is highly important that all who practice medicine should recognize the value of the best preparations of malt, for it is often necessary, while giving treatment to separate organs, that the physician should give special attention to the digestive organs and processes, or else he will find his results unsatisfactory.—*Jour. of Med. and Sci.*, September.

A Quinquennial Census Necessary.—Dr. E. W. Hope of Liverpool objects to the official estimate of population in his city, as based upon the regular decennial census. He has been a careful student of the subject for many years, and it is his belief that a material underestimation of his city's growth has resulted from "the rule of thumb" measures and methods that obtain in official circles. He says that during recent years reasons have been growing stronger for calling into question the correctness of the results of the method adopted by the registrar-general for estimating the population of the city. The method, it will be remembered, is based upon the assumption that the rate of change (increase or decrease) in the various districts of the city which took place year by year during the intercensal period ending in 1801 has continued since. The registrar general estimates that the population has increased from 629,443 in 1891 to 633,645 in 1898, i.e., the total population of greater Liverpool has increased by 600 every year, making a total increase during the seven years of 5200. The reasons for believing that this estimate is very much below what the population actually is may be summarized in the following manner: The natural increase of the population, viz., the increase in the number of births over deaths since the census of 1891, exceeds 40,000. The increase in the number of registered voters since the last census exceeds 26,000. The increase in the number of houses built over those which have been demolished since the last census is close upon 3500. The increase in the number of inhabited houses since the last census was found, by police inquiry early in ths year, to be upward of 14,400; making a liberal deduction of 5 per cent. for a possible margin of error, leaves an increase of 13,620. Each of these facts suggests strongly that the actual increase has been greater than the estimated increase. Clearly, what is wanted is a more frequent census for the whole country, certainly not less frequently than every five years. It is singular that the registrar-general is satisfied week after week and year after year to publish, under the imprimatur of his office, figures which everyone conversant with the subject must hesitate to accept as correct. No word of explanation, no word of warning, no comment is issued with these returns; cities and districts are strung together for comparison, with egregiously misleading results, and with consequences which tend to cripple and retard sanitation. No doubt a quinquennial census would go far to correct these mistakes, and tend not only to prevent the waste of time involved by the compilation and issue of fictitious returns, but also to put an end to the mischief which such returns give rise to. But, pending such a census, it is unsatisfactory to find that the registrar-general regards the subject as of so little importance as to decline to discuss it, preferring to leave the matter for his successor to deal with. The decennial census was inaugurated one hundred years ago, and the benefits afforded by it now require to be supplemented by a quinquennial one. At the meeting of the Section of State Medicine of the British Medical Association in Edinburgh, July 27, 1898, a resolution was unanimously passed to the effect that it was absolutely essential that a qinquennial census of the whole country should be taken in order to ensure accuracy in statistics relating to the public health. In Germany a five-year census is taken, and in Japan the register of the population of each sub-district is corrected annually by the addition of infants born or of persons domiciled in the district, and by the removal of persons dying or leaving the district.—*Public Health*, October.

The Teaching of Anatomy.—The teaching of anatomy at Columbia University has reached the differentiation stage of progress. A new curriculum has been adopted, in such a manner that the topics will be distributed in a two-year course in human anatomy, and the students may be distinguished as being either of the elementary or the advanced classes. Dr. G. S. Huntington of the College of Physicians and Surgeons, who has labored early and late to bring about this improvement in his branch, has published his views of the probable results of the new teaching, in *Bulletin* XX, of the Columbia University. He says that the new plan has enabled his school to solve a part of the problems of the intelligent education of his pupils in as nearly a satisfactory manner as seems now to be possible.

The first-year student does not attend any lectures in anatomy. During this year the instruction consists in practical demonstrations to small sections of the class, dealing with the entire anatomy of the extremities and with the bones, joints, muscles and blood-vessels of the head and neck, including also part of the peripheral nervous system of this region. In direct connection with the demonstrations, extensive practical work in the dissecting-room is required. The first-year student also attends a series of demonstrations constituting the preliminary visceral course, designed to afford that general information regarding the body cavities and their contents which is requisite to the correct appreciation of the concurrent instruction offered by the departments of physiology and histology. In the second year the laboratory work continuing, the student attends demonstrations to sections of the class in the anatomy of the central nervous system, organs of special sense and cranial nerves. The entire second-year class attends three lectures a week on the anatomy of the body cavities and viscera. The preparations illustrating these lectures are, in the afternoon of the lecture-days, demonstrated again separately to sections of the class, enabling each student to study and inspect the same closely. In this way an opportunity is given to make the anatomic lecture what it should strive to be, not an attempt to teach anatomy at long range to several hundred men at once, but an occasion for presenting the broad morphologic principles upon which the animal organs, apparatus and symptoms are constructed. Here the significance and importance of the structural peculiarities of the man can be accentuated, illustrated, and explained in all their bearings by contrast with the corresponding structures of the lower vertebrates. It is quite evident that the institution must command the requisite material for illustration in order to carry out a liberal plan of instruction in general morphology. The progress of the last eight years in this respect has been gratifying. The morphologic museum began its development in 1890 in one of the small rooms in the cellar of the south wing. Columbia today possesses an equipment which, while it still falls short of the ultimate design, yet is unequalled in the beauty and clearness of the preparations, and in the complete character of the series most extensively used in the courses of instruction. The first and second floors of the new anatomic building are designed to be the permanent home of the museum, and provide ample floor and gallery space. It is the confident hope of the department that here the future growth of the collection will be as rapid and healthy as it has been in the past under less favorable surroundings. Unfortunately, however, it was found necessary at the time the anatomic building was erected to leave out the equipment, and the department is today in urgent need of cases for the two floors. The old cases inherited from the pathologic museum are overcrowded and have to be used merely for storage. The museum loses one of its most important educational features in not being accessible for purposes of serious study in present condition. It is not possible to carry out the systematic serial exhibition which is the fundamental principle in the application of the collection of the student.

Surgical Scenes in Asia Minor.—Dr. William S. Dodd, a medical missionary at Cesarea, Asia Minor, writes of his surgical experiences following a little local war or revolt. He says: "When I have read the surgical reports from the army at Santiago, and learned that out of nearly thirteen hundred wounded, only sixty-eight died, and hardly one of these from wound infection, I could not but contrast such a condition with the results of a recent incident in this land. The preparations made for the immediate application of antiseptic dressings to the wounds by the wounded themselves or by their comrades, together with the general intelligence of the men who make such preparations effective, is so utterly different from anything that could be thought of in this land on the part either of the people or the authorities as to make one realize the blessings of civilization and Christianity. A week after the fight there came to me a messenger from Oozoonloo, requesting me to see the wounded. Not a physician or surgeon had been sent by the Government to look after the suffering. In this country there are no physicians except in the cities, so that the region for a distance of ninety miles is a blank, as far as medical service is concerned. Before I could go I must have the permission of the Government; official word must be sent back and forth before this could be secured, inasmuch as Oozoonloo is not under our own governor; and so it was eleven days after the battle when I reached there. I found then that a Turkish physician had reached there shortly before me, but he knew nothing of surgery, had no antiseptics with him, and the wounds were, of course, all in a horribly septic condition. Many of them had had no change of dressing for several days, and these, too, compound and comminuted fractures of large bones. The village dressing in such cases ofttimes consists of fresh manure applied with the idea of reducing inflammation. In the case of the father of a poor family of six children, on whose account more than of any other one person I had been begged to come, lockjaw had already set in, and he died soon after. The Turkish physician had no idea of drainage for these deep discharging wounds, having plugged them all with pieces of twisted wicking, the universal method of "drainage" in this country. I used up three yards of drainage tubing in dressing seventeen cases. I left a supply of antiseptics and of directions with the man who does the local "doctoring" of the place, and so came away feeling that my visit would not be wholly in vain. The whole incident is pre-eminently Turkish. The change of the seat of government for the sake of self-interest of officials, the element of bribery in the case, the foolish opposition of the people, their persuasion that force would not be used against them, the encouragement to this belief from the long dallying of the authorities, the final outburst ten times more bloody than was needed, the neglect of the suffering and carelessness for their welfare, and the ignorance of the official government physician who came more to make a report on the wounds of the dead than to care for the living—all these are just what one would expect in Turkey.—*The Evangelist.*

Medical Inspector for the Army.—Col. Charles R. Greenleaf, assistant surgeon general, U. S. A., has been assigned to duty as medical inspector. The scope of his duties has been defined in a letter addressed to him, Dec. 3, 1898, by the Surgeon-General, as follows: In the discharge of your duties as medical inspector of the army you are expected to report to me upon the sanitary condition and wants of troops in the field, at military posts and in general hospitals, and as regards the skill, efficiency and conduct of officers, enlisted men and civilian employes connected with the medical department. You will see that existing orders and regulations relating to the medical department are complied with, and that all prescribed reports and returns are promptly made and forwarded when due. You will examine into the quality, quantity and condition of medical and hospital supplies, reporting any failure upon the part of responsible medical officers to make proper requisitions, and any deficiencies found due to failure on the part of supply officers to promptly fill approved requisitions. You will ascertain what diseases are most prevalent in the camps visited by you, and will inquire into the cause of such prevalence and the steps which have been taken for the prevention or arrest of any infectious diseases which may exist, indicating verbally or in writing to the responsible medical officers such additional measures or precautions as may be requisite. When sanitary reforms requiring the sanction and co-operation of military authorities are urgently demanded, you will report at once, in

writing, to the officer commanding the military department, corps, division or camp, calling his attention to the facts, and recommending such measures as you consider necessary for the relief of insanitary conditions existing. A duplicate of such report should be forwarded to the Surgeon-General of the army. You will ascertain whether medical supplies are properly used and with due regard to economy; whether any additional articles not now included in our supply-tables are necessary for the treatment of the sick; whether the equipment of regimental hospitals is such as is contemplated by recent orders; whether cases of infectious diseases or of soldiers seriously ill are improperly retained in regimental hospitals; whether division hospitals are fully equipped as regards supplies, medical officers and attendants to properly care for the sick of the command to which they belong; and whether contract surgeons have been examined as prescribed by recent orders. You will give especial attention to diet kitchens, and see that they are equipped for providing the sick with suitable light diet. You will ascertain whether a proper use is made of the fund provided for the purchase of suitable articles of diet for the sick, as prescribed in General Orders No. 116, and whether the commissary department has on hand for sale such articles as are necessary. You will also inquire as to the sufficiency of tents, ambulances, and other articles furnished by the quartermaster's department. You will report any abuses or deficiencies existing to the commanding general of the department, corps, division, camp or military post, sending a duplicate of this report to the Surgeon-General of the army. You will also report upon the professional competence, attention to duty, and general qualifications of medical officers, calling the attention of the Surgeon-General to those who deserve especial commendation, and also to those who are considered incompetent, or for any reason undesirable members of the medical department. You should give special attention to the efficiency of the hospital corps, reporting whether proper discipline is maintained and proper instruction given in all that pertains to the duties of enlisted men of that corps.

Not Synonymous.—According to a judge of the court of the State of Rhode Island and Providence Plantations, medicine, in the popular sense, is a remedial substance. The practice of medicine, as ordinarily or popularly understood, has relation to the art of preventing, curing or alleviating disease or pain. It rests largely in the sciences of anatomy, physiology and hygiene. It requires a knowledge of disease, its origin, its anatomic and physiologic features, and its causative relations; and further, it requires a knowledge of drugs, their preparation and action. Popularly, it consists in the discovery of the cause and nature of disease and the administration of remedies or the prescribing of treatment therefor. This all assumes importance when the supreme court of Rhode Island says, in the case of State vs. Mylod, July 18, 1898, that, in the construction of penal statutes, a well-established rule is that words and phrases must be taken in their ordinary acceptation and popular meaning, unless a contrary intent appears, and that the words "practice of medicine" must be taken in this, their ordinary or popular meaning, in determining whether a statute regulating same is violated by certain acts of a Christian scientist, for example. Its conclusion is that prayer for those suffering from disease, or words of encouragement, or the teaching that disease will disappear and physical perfection be attained as a result of prayer, or that humanity will be brought into harmony with God by right thinking and a fixed determination to look on the bright side of life, does not constitute the practice of medicine in the popular sense nor, therefore, violate the statute referred to. And the court does not think that because the statute applies not only to those who actually practice, but also to those who announce in any way a readiness to practice, that the legislature intended to give a broader than the generally accepted meaning to the words "practice of medicine." The most that it thinks can be claimed for this feature of the statute is that it operates to broaden the offense created by the statute so that the attempt or the announcement of a readiness to practice medicine becomes equivalent to the actual practice. Furthermore, a recognition by the statute of the existence among medical men of differences regarding the treatment of disease, while certain diseases are treated by the "regular school" without the use of drugs, the court maintains, does not broaden the meaning of the words "practice of medicine" to include the practice of that which, in the popular sense, is not a practice of medicine. To give to the words "practice of medicine" the construction claimed for them, it also suggests, would lead to unintended results, because, if the practice of Christian Science is the practice of medicine, Christian Science is a school or system of medicine, and is entitled to recognition by the State board of health to the same extent as other schools or systems of medicine, as, under the statute under consideration, the board has no arbitrary power, and can only determine whether the applicant possesses the statutory qualification to practice in accordance with the recognized theories of a particular school or system. To protect the public, not from theories, but from the acts of incompetent persons, the court goes on to say, the legislature has prescribed the qualifications of those who may be entitled to perform the important duties of medical practitioners. The statute is not for the purpose of compelling persons suffering from disease to resort to remedies, but is designed to secure to those desiring remedies competent physicians to prepare and administer them. Nor does it, in terms, prohibit the use of the word "doctor" by any person, whatever his business or profession may be. The assumption of that title by a Christian scientist is not unlawful, and the use of the word is entirely immaterial in any case, unless under such conditions or circumstances, or in such connection, that it may serve as an announcement or indication of a readiness to engage in the practice of medicine or surgery.

Necessity of Intestinal Bacteria.—Schottelius recently raised some chickens from the egg in absolutely aseptic conditions, with the result that the fowls did not thrive like the control-chickens, but gradually dwindled away and died by the seventeenth day.—*Munich Med. Woch.*, No. 36.

Physicians' Strike.—The difficulties between the profession and the "sickness insurance associations" in Germany culminated recently in a definite "strike" on the part of the medical men in two German cities. The strike at Barmen resulted in favor of the physicians, as a satisfactory compromise was effected, but at Remscheid the organization won the day, bringing in outsiders to fill the vacancy, although with the result of the founding of a new association with the former medical attendants. These associations to provide medical attendance in case of illness, are for the benefit of the laboring classes, and are mostly managed by working men or small trades-people, who assert their mastery over the physicians who contract to attend to their sick, by appointing and dismissing them at pleasure, a system which leads to many abuses. It has been abolished in some places where the association makes a contract with some local medical society, any members of which can be summoned to their sick at contract rates.

Red Ant Pest at Albany.—Taken individually, the small red ant (*Monomorium pharannis*) is not difficult of extinction. A well-planted foot will terminate the existence of the hardiest specimen. Taken en masse, however, he prospers exceedingly, even under adverse conditions, and his multiplication is fairly logarithmic for speed. Pouring boiling water, benzin or kerosene emulsion upon his domicile, if it can be found, tends to discourage him. The difficulty is to track him to his lair. Old and rotting woodwork is a favorite abode of his, and the old-

fashioned wooden sidewalk forms a roof of easy exit for populous ant cities. It is unlikely that the Albany correspondent will be troubled further this year by the small red pests. If he will start in early next summer and trail home the first red ant he sees about the house, he will probably be able, by a liberal use of the hot water boiler, to free his own immediate vicinity from the industrious and pervasive insects.—*New York Sun.*

Gleanings.—The *Bulletin de la Soc. de Pharmacie* states that bismuth salicylate should be rejected on account of its uncertainty and impurities, and the subnitrate used or, better still, the "cream of bismuth," the hydrate of bismuth oxid. . . . Orthoform is warmly recommended for cracked nipples. Besides its analgesic action it is siccative and antiseptic, healing the cracks in a few days. . . . Nitrate of silver crayons are found more effective than the solution, for buboes, panaris, etc. A crayon 2 to 4 mm. in length, inserted and left, will rapidly cure the lesion without too much caustic action (*Semaine Méd.*, November 16). . . . Netter ascribes to the sterilization a case of infantile scorbutus in a child fed exclusively with home Soxhlet sterilized milk from a well-directed dairy. In 103 observations there were only 11 in which similar conditions prevailed. In 29, the milk was bought ready sterilized. The rest used various preparations (*Bull. des Hôp.*, November 10). . . . Birth of twins with eleven days interval between them (*Lyons Méd.*). . . . Wolfe reports the case of a healthy woman who never menstruated, but when 45 years of age was much frightened by an insane girl, commenced to menstruate the same day, and eight months later conceived and bore a healthy child (*Lancet*, August). . . . Schultze adds another to the eight cases on record of echinococcus ovarii; not diagnosed before operating; patient recovered a year later. . . . Non-closure of the foramen ovale forming almost entire absence of septum in patient of 42 years, and in another of 62 (*Deutsche Med. Woch.*, November 17). . . . Lechner describes the case of a student who can make one eye go through the motions of abduction and adduction, while the other is fastened on a fixed spot, without varying the accommodation. It confirms Herring's law in regard to the associated innervation of the ocular muscles (*Graefe's Archiv.*, No. 3). . . . Professor Hayem's new clinic at the Saint-Antoine is arranged so that it can be darkened at a moment's notice, for radiographic work, projections of microscopic preparations, etc. . . . Two cases of tubo-abdominal wall fistulas are reported, through which menstruation occurred during the period, showing the bloody discharge in the tubes as in the uterus (*Cbl. f. Gyn.*, No. 45). . . . Rose recommends a wedge-shaped excision of the tubes from the uterus to protect against subsequent gonorrheal infection of the peritoneum, or to insure sterility. . . . Case of fatal intoxication from injection of gray oil (*Berlin klin. Woch.*, No. 46). . . . Case of noma after scarlet fever, with congenital syphilis, cured with potassium iodid (*Deutsche Med. Woch.*, 46). . . . Three cases of aneurysm of the mitral valve, observed by Drasche. Peculiar musical sounds noted. Small chronic aneurysms of this kind sometimes heal spontaneously (*Vienna klin. Woch.*, 45). . . . Case of myxedema in woman of 47 years, progressing for years, completely cured with thyroid tablets. . . . According to the *Munich Med. Woch.* of November 22, Finsen's "Light Institute" at Copenhagen (vide JOURNAL, page 303) is richly endowed, and the daughters of the best families volunteer their services as attendants. His treatment of lupus with concentrated electric light is proving very successful. . . . Unfavorable influence of kidney troubles on the course of an infective disease is confirmed anew by a fatal case of measles in a patient with nephritis (*Vienna klin. Rund.*, 47). . . . Naughehauer reports a case of extra-uterine pregnancy nearly at term; living child extracted through the abdomen; mother recovered; placenta implanted in the cavum vesico-uterine (*Vienna klin. Rund.*, 47). . . . Sudnik has found the "high frequency" current very valuable in reducing an intracaracoid luxation of the shoulder. Besides its anesthetic effect it acts directly upon traumatic contractions (*Journal d' Hygiene*, Nov. 17).

Old Plantation Malady.—Doctor: Your wife must have chicken broth three times a day, and you must give her a spoonful of this medicine every hour during the night. Mr. Jackson (dubiously): Wa-al, doctah, I doan' see how yo' specks me toe pervide her wif de chicken broff and gib her dat medicine at de same time.—*Factotum.*

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward, for the week ended December 3, shows the total number of deaths to have been 117, of which 69 were white and 48 colored. The principal causes of death were: consumption, diphtheria, nervous diseases, heart diseases, diseases of the kidney, pneumonia, scarlet fever and typhoid fever. At the close of the week there were 123 cases each of diphtheria and scarlet fever under treatment.

NEW MUNICIPAL HOSPITAL.—Senator McMillan has introduced a bill in the Senate which provides for the building of a new municipal hospital, in which shall be treated the patients now cared for in the Columbia, Freedman and Almshouse Hospitals. The bill directs the trustees of the Columbia Hospital to sell that property and hand the proceeds into the United States Treasury Department. It further provides for an appropriation of $200,000 for the purchase of a site for the proposed hospital, and a further sum of $50,000 to begin the erection of buildings, which may, when completed, cost $200,000.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The monthly meeting of the attending staff was held December 3, to receive the report for the month of November, which was as follows: Number of new cases, 566; number of ward patients, 81; number of emergency cases, 362; number of redressings, 188; number of prescriptions, 2989; number of deaths, 7; number of postmortems, 4. Dr. Mohart, assistant resident physician, who has been seriously ill for the past two weeks, is now convalescing and will shortly resume his duties. Dr. James R. Church, the medical hero of the Rough Riders, and formerly a resident physician of the hospital, has successfully passed the examination and been admitted as a surgeon of the regular army. Dr. Church is a graduate of the Columbian University.

Louisville.

A RETROSPECT.—Dr. T. B. Greenley of Meadow Lawn, Ky., read a very interesting paper before the Filson Club on the 5th inst., entitled, "The Doctors of Long Ago," which was a delightful reminiscence of the physicians of Louisville during a period between 1844 and 1846, during which time Dr. Greenley was a student of the University of Louisville Medical Department, and subsequent years. The oldest physician in Louisville at that time he said was Dr. Hall, who in 1797 was elected assessor of the town, which then consisted of not more than 500 inhabitants. Another of the pioneer physicians mentioned was Jas. C. Johnson, the first white male child born in Louisville after its settlement on the banks of the Ohio. Dr. Greenley is still in active practice, though more than 80 years of age, and has long been an active medical society worker, last year attending the meeting of the Kentucky State Medical Society, three local and county medical meetings, the AMERICAN MEDICAL ASSOCIATION in Denver, and the meeting of the International Association of Railway Surgeons at Montreal, he being the local surgeon at Meadow Lawn to the Illinois Central R. R.

APPROPRIATION.—Among the appropriations mentioned in the dispatches from Washington is one of $8,500 for the Marine

Hospital at Louisville. For the five internal revenue districts of Kentucky, $151,500 is appropriated.

OSTEOPATHY.—In the case of G. N. Murphy against the State Board of Health, the injunction granted by Judge Settle preventing the Board from molesting the plaintiff in the practice of his profession, has been made perpetual. The State Board of Health has appealed the case, and as it is of such vital importance to the Board, the case has been set for an early hearing. This is the case in which the Board sought to revoke the license of Dr. Murphy for practicing osteopathy.

London.

CALCULI AND CANCER.—An interesting discussion developed in the Pathological Society, November 18, over the specimens of primary carcinoma of the gall-bladder, one shown by Prof. Bradford without a calculus present, and one by Dr. Hunter with a calculus firmly grasped by the growth. Dr. Hunter was of the opinion that the presence of gall-stones in cancer was simply a coincidence, like a carious tooth in epithelioma of the tongue or lip. Dr. Voelker took the same view, although they certainly were much more commonly present in carcinomatous gall-bladders than in normal ones, the proportion being about 70 and 30 per cent. respectively. This might easily be accounted for by blocking and derangement of secretions. Several others spoke in the same strain. The secretary, Dr. Rolleston, believed that while much of the coexistence of the two conditions might be ascribed to mere coincidence, it could not all be so explained. He cited the recent researches of Zeigler, who found calculi present in 90 per cent. in a large number of cases of primary carcinoma he had collected. To check this result, he cited some sixteen cases of secondary invasion of the gall-bladder, and found stones present in only 20 per cent. Acting upon this suggestion Rolleston had searched his own hospital case-reports and found five cases of primary cancer, in four of which stones were present, and six cases of secondary invasion in only two of which were calculi found. He, therefore, agreed with Zeigler that some important relation actually existed between gall-stones and primary carcinoma. The president, Dr. Payne, thought that cancer of the entire alimentary tract was rapidly increasing in frequency, and the gall-bladder was no exception. He regarded the relation between it and calculi as extremely uncertain.

HARBEN LECTURE.—In the last Harben lecture upon "Tuberculosis," Sir Richard Thorne discussed the problem of compulsory notification of phthisis, and, after a careful survey of the field, pronounced definitely against it. He regards the case of tuberculosis as far from parallel with that of scarlet fever or diphtheria, and thinks that at present legal interference will do more harm than good, preferring to rely upon educating popular opinion. The experience of New York City, he regards as conclusive, inasmuch as the enforcement was extremely partial and only practically among the tenement classes, and secondly, because the marked diminution in the death-rate attributed to it was already in progress before the measure was enforced.

THE GREEN OYSTER.—Professor Herdman, as chairman of the special commission upon the oyster industry, has just made an important report. The commission finds that the green color liable to occur in oysters is due to two causes: one, as in the celebrated "green oysters" at Marenne on the French coast, so highly prized by epicures, and the bivalves from certain English river-mouths, harmless, and due probably to swarms of small vegetable organisms; the other, as in some American oysters and those from Falmouth, and possibly from Colchester, is caused by an excessive deposit of copper and iron in the tissues, and is probably pathologic. The copper is deposited from the blood by the leucocytes, both in the tissues and upon the surface of the body, in the form of a basic carbonate. The interesting feature of this change is that as copper plays much the same rôle in the blood of molluscs, as iron does in that of mammals, we may here have a deposit of blood salts, such as occurs in chlorosis and pernicious anemia—our human "green sickness;" indeed, Herdman described the process as a "leucocytosis." But, unfortunately, the oyster is not satisfied with the association of harmless micro-organisms. The commission reported the finding of large numbers of bacilli of the colon group, somo of which gave reactions suggestive of bacillus typhus in the gill-cavities and stomach of many samples of oysters. None of these oysters, however, had been taken from pure sea-water, but as the bivalve has a distinct affinity for sewage bacteria, and a saying of the fisherman is "the muddier the water, the fatter the oyster," so that they are brought farther and farther up the estuary as the time of their marketing approaches, they recommend that active measures be taken to inspect all oyster-beds frequently with reference to their possible contamination by sewage. There seems a decided probability that the oyster actually collects the bacteria from the water, as its food consists chiefly of vegetable micro-organisms, and it fattens rapidly in water containing small amounts of sewage. It is not injured by the pathogenic germs and probably would digest them along with the others. What we suffer for is our rudeness in interrupting the oyster during digestion.

MEDICAL SOCIETY OF LONDON.—At the last meeting, the president, Mr. Edward Owen, reported a successful gastro-enterostomy for pyloric cancer, with the use of the Murphy button. The patient was failing rapidly in strength, but since the operation in July last, had gained twenty pounds and was nearly free from pain. Mr. Battle presented a case of total disappearance of a large sarcoma at the neck and superior mediastinum, under the use of Coley's fluid. The President objected to the case going into the Transactions as an instance of cure by this method, as he thought the real nature of the growth uncertain. Mr. Mansell Moullin congratulated Mr. Battle upon reporting the *first authentic case* of cure by Coley's fluid (italics ours) in this country, which in view of his championship of the method and its numerous trials, was rather a surprising statement. Mr. Waterhouse declared himself very skeptical as to the value of the method and the reliability of some of the reports made upon it. He himself had tried it in five cases with no result whatever, except the death of two patients by hyperpyrexia. The impression seems to be general that no one else can get such results as Coley reports.

CHANGE OF ADDRESS.

Burns, T. M., from 925 to 841 So. Water Street, Denver, Colo.
Bradford, H. W., from Jamaica Plain, Mass., to Wolfboro, N. H.
Beach, S. C., from McCook to Ravenna, Neb.
Brown, Le Roy, from Heron to St. Paul Park, Minn.
Craig, J., from White Sulphur Springs to Columbus, Mont.
Clark, J. A. M., from Detroit to Cascade, Mich.
Cutter, J. B., from Colonial Hotel to Presidio, San Francisco, Cal.
Durbin, L. T., from 2430 Stout to 1763 Clarkson, Denver, Colo.
Dougherty, P., from Los Angeles to 80 So. Madison Ave., Pasadena, Cal.
Dvorak, W. J., from 1539 to 1540 W. 22d Street, Chicago, Ill.
Davidson, T. W., from Galesburg to Abingdon, Ill.
Huntington, W. D., from Adeline Street to Central Bank Bldg, Oakland, Cal.
Johnson, F. W., from 919 to 626 John Street, Cincinnati, Ohio.
Kennedy, T. W., from 1024 17th Avenue to 1540 High Street, Denver, Colo.
Peery, M. E., from Pittsfield to Carthage, Ill.
Ross, C. H., from Summerfield, Kan., to Upland, Neb.
Raub, J. L., from 319 B St., S. E. to 421 B. St., N. E., Washington, D. C.
Scheiber, 146 N. Clark to 298 E. Division, Chicago, Ill.
Sauer, F. N., from Racine to 320 Chestnut Street, Milwaukee, Wis.
Stokes, W. B., from Coldwater to Farmington, Ky.
Yolton, J. L. & R., from Eddy Bldg., to 208 E. Jefferson Street, Bloomington, Ill.
Zeller, H. R., from Beamsville to North Lewisburg, Ohio.

LETTERS RECEIVED.

Byerly, A. J., Coggon, Iowa; Beck, Carl, New York, N. Y.
Cadwalader, J. S., Cleveland, Ohio.
Dewey, R., Wauwatosa, Wis.; Derrick Adv. Agency, The Paul E., New York, N. Y.
Elson, I. A., Smithville, Ohio.
Harrison, R. H., Houston, Texas; Hummel, A. L. Adv. Agency, New York, N. Y.
Johnson, T. J. L., Washington, Pa.
Lautenbach, L. J., Philadelphia, Pa.; Lee, C. B., Glen Jean, W. Va.
Morgan, J., Cambridge, Vt.
Rose, J. R., Eastman, Ga.
Snyder, John F., Hawkeye, Iowa.
Wynn, F. B., Indianapolis, Ind.